

AMERICAN GAS ASSOCIATION

Monthly



MAY 1951

"Naturally..."



"Cooking professionally in a city known the world over for its fine food," says Betty Underwood of New Orleans, "is a real challenge! That's why I wouldn't dare cook with anything but Gas. It's the only fuel *sensitive* enough to give the quick changes in heat I need for my delicate dishes. As for meats and other broiled specialties, nothing equals *live flame* for flavor!"



"My home comes first," says Mrs. Otto Panzer of Portland, Ore. "It's not elaborate, but everything in it is the best I could buy. My beautiful new Gas range, for instance. It not only cooks perfectly, but it's *automatic*. Even the oven and broiler light without matches. And it's *immaculately* clean! Has *never* made a single smudge on pan bottoms or my light-colored walls."



"In our ranch-type house," says Mrs. Elmer Tollefson of Minneapolis, "we have only the most modern and easy-to-operate equipment. That's why I insisted on a new automatic Gas range. It bakes better, broils better . . . even cooks a complete meal by *clock control*! Looks more modern, too. The lines of my new Gas range are ideal for my streamlined kitchen!"

I prefer a Gas range!"

NEW FREEDOM GAS KITCHEN (©A.G.A., INC.)



ESTATE Gas range — just one of many beautiful new Gas ranges now at your Gas company or appliance store.

and there are 26,999,997 other smart women who cook with Gas!

Gas

has got it!

FOR MODERN
COOKING
REFRIGERATION
WATER-HEATING
HOUSE-HEATING
AIR-CONDITIONING
CLOTHES-DRYING
INCINERATION

see the
SPRING STYLE
SHOW of NEW
GAS RANGES
today!

AMERICAN GAS ASSOCIATION

• Testimonials from customers selected by gas companies feature a new series of A. G. A. national consumer magazine advertisements



Gas distribution employee of The Cincinnati Gas & Electric Company wearing regulation safety equipment. Note metal toe caps, gloves and goggles, safety chains on hose couplings

WE must do justice to our customers and grow with the tremendous potentials of new gas loads. Only in this way, remarked a speaker at the GAMA meeting last month, can we hope to stay in business successfully. . . . Various phases of this theme were highlighted at A. G. A. spring conferences. Operating men were asked to draw up a realistic plan for meeting new loads. Accountants and domestic gas men were reminded that the customer is the vital link in the gas industry's future. Industrial and commercial men were advised to develop a broad economic view of their customers' problems. . . . One of the most significant developments of the month was the natural gas forum at the annual meeting of New England Gas Association. Here was a singular example of progress—gas executives from all sections of the country cooperating to help a regional group prepare for changeover to natural gas. As one Memphis conference speaker noted, participation in a conversion broadens the individual and makes him a better gas man. . . . Such united effort on changeover or any other major issue of the day also forges a stronger gas industry. May we continue to breed such spirit!

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CONTENTS FOR MAY 1951

FEATURES

CONFERENCE QUOTES	2
EFFECT OF THE NEW HEATING LOAD—by J. G. White	4
EMPLOYEE ACCIDENTS AT POSTWAR LOW	7
RADIANT HEAT—WORKHORSE OF THE GLASS INDUSTRY—by Robert C. LeMay	8
DOLLAR SALES RISE AGAIN DURING 1950	11
A-BOMB EXERCISE ALERTS GAS COMPANY DEFENSES	13
LARGE EXPANSION PREDICTED IN GAS HOUSE HEATING	14

SECTIONS

ACCOUNTING FOR PIPE, POLES, ETC.—by John A. Williams	16
HOW TO SELL IN THE EMERGENCY	19
MASTER PLAN NEEDED FOR NEW LOADS	21
WANTED—AN AGGRESSIVE APPROACH!	26
LABORATORIES	29

DEPARTMENTS

INDUSTRIAL RELATIONS ROUND-TABLE	30
INDUSTRY NEWS	31
A. G. A. ANNOUNCES APRIL 1951 PUBLICATIONS	31
PERSONAL AND OTHERWISE	36
ASSOCIATED ORGANIZATION ACTIVITIES	38
OBITUARY	43
NEW A. G. A. MEMBERS	50
CONVENTION CALENDAR	51
PERSONNEL SERVICE	52

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Conference Quotes

Cross-section of comment from Major A. awareness of the customer's role in industry efforts hold attention of accountants operating

Sales Conference on Industrial & Commercial Gas

● OSCAR BYRON, J. O. Ross Engineering Corp., New York, N. Y.—“Do you know that in 1950 about six billion beer cans were manufactured and consumed in the United States? The sprayed inner lining of every one of these cans was baked in a direct gas-fired oven.”

● J. P. LEINROTH, sales manager, gas department, Public Service Electric & Gas Co., Newark, N. J.—“The effect of the mobilization program on the gas industry appears obvious. It is clear that we shall have increased demands put upon us for gas service. These demands will be particularly large in the industrial field. There will be, as a corollary, increased demands for industrial gas equipment. . . . Working together, the industrial gas man and the manufacturer's representative should see that their customers have the most efficient and most effective means of production and that there is a minimum of improperly designed equipment and poor gas applications in their customers' plants. . . . The customer should receive full cooperation in planning, securing, installing and operating the new equipment.”

● L. J. FRETWELL, chief commercial engineer, Oklahoma Natural Gas Co., Tulsa—“We must sell our fuel, the equipment which uses the fuel. And we must sell our services. We must help train the dealer salesmen so well that they too are sold on gas as the best for all volume cooking requirements. We should have regular sales meetings with dealer organizations and show them why it is to their advantage to sell gas appliances.”

● WILLIAM H. LOVING, manager, government division, Washington Gas Light Co., Washington, D. C.—“We find it necessary to perform the following services in selling gas to any Government agency: (1) In order to promote the sale of high-grade gas appliances it is necessary to write the specifications for the equipment and to furnish a list of prospective bidders. Most Government agencies purchase equipment on competitive bidding. It is also necessary, in many cases, to size the equipment. (2) It is necessary to maintain the good will of all Government officials who make fuel decisions. (3) Maintain higher than average standards of adjustment and repair.

(4) It is frequently necessary to assist Government engineers in the layout of house piping, location of gas meters, and the interpretation of local gas codes. (5) It is often necessary to make fuel comparison studies which include investment costs, operating costs and maintenance costs. (6) It is sometimes necessary to fill vacuums in the organization of your company when dealing with the Government.”

● RICHARD W. THORNE, president, Bennett Steel Treating Co., Newark, N. J.—“If the rank and file of commercial heat treaters in this country only realized the definite potentialities of gas, they would all raise a large banner over their plants inscribed with the big letter ‘G’.”

● S. L. CASE and H. J. GROVER, Battelle Memorial Institute, Columbus, Ohio—“An over-all conclusion is that, in this investigation, hardening by gas heating appeared technically as good as, if not superior to, hardening by induction heating.”

● ROBERT J. WILSON, executive vice-president, Washington Restaurant Association, and Washington secretary, National Restaurant Association—“. . . the gas industry should have men who are trained to assist our industry and work closely with it in selecting the right kind of equipment. . . . During an emergency such as we are experiencing today, our gas industries must cooperate with the association (restaurant) in assisting members to complete Government forms under the Defense Production Act.”

National Conference of Electric and Gas Utility Accountants

● J. GORDON ROSS, Rochester Gas & Electric Corporation—“Personal contacts with customers are far more effective in adjusting delicate situations than are letters. . . . Wise management realizes that good customer relations are the result of unceasing effort. . . . Finally, there is a direct relationship between our customer relations and the survival of the free enterprise system.”

● R. B. MITCHELL, The Peoples Gas Light & Coke Co., Chicago—“Every telephone call to a customer who owes money is a sales talk—one that requires understanding and the use of good judgment.” The six ‘C’s’ that make

Major A.G.A. spring conferences reveals growing gas industry operations. Impact of emergency and need for stronger sales generating and industrial & commercial groups

a successful telephone interview are: cheerfulness, courtesy, care, clarity, completeness and character.

● **ALBERT F. TEGEN**, president, General Public Utilities Corp., New York, N. Y.—“Stockholder's interest in communications from the company centers on the following: (1) How is the company doing? (2) Earnings recitations should be on a per share basis in terms of presently outstanding shares. (3) They want to know whether the dividend is adequate in relation to earnings and surplus. (4) If the company is in a competitive situation, stockholders like to know that the company is obtaining its fair share. (5) They like to know whether relations with employees are satisfactory but they are suspicious of managements who profess to run the company in the interest of 'employees and stockholders.' (6) All of them want some idea as to *outlook*. (7) They want significant events brought to their attention but they do not want lengthy explanations. (8) All of them want straightforward and simple interpretations—not glamour.”

● **HARRY C. SMITH**, The Peoples Gas Light & Coke Company (on “Are District Offices the ‘Thing?’”)—“Make it convenient for the customer to meet you face to face.”

Distribution, Motor Vehicles and Corrosion Conference

● **J. V. TURPISH**, **K. J. BURNETT** and **D. L. DRAKE**, New York and Richmond Gas Co., Staten Island, N. Y.—“Participation by the individual in a conversion broadens his outlook on, and his understanding of the industry. Without question, it makes him what we all want to be, a better gas man.”

● **JOHN MACLARTY**, Rochester Gas & Electric Corp., Rochester, N. Y.—“In the final analysis everything we do depends on the most important consideration, the customer. To many customers the serviceman is the company. Training improves the contact between serviceman and customer.”

● **E. CLYDE MCGRAW**, Transcontinental Gas Pipe Line Corp., Houston, Texas—“A corrosion control program enables us to use safely, a lighter weight pipe with considerable savings in steel tonnages. This more efficient

use of steel also increases the inside diameter of a given size pipe which permits a greater quantity of gas to flow at a given pressure. Along with the reduced tonnage are corresponding savings in freight charges.”

● **J. P. CLENNON** and **J. K. DAWSON**, The Peoples Gas Light & Coke Co., Chicago—“With the aid of an electric network calculator, solutions of complex network problems will be provided more quickly and accurately than through the conventional methods presently employed by the gas industry. Use of a calculator is not warranted when the problem involves a single pipe system or two pipes in parallel, such as cross-country gas transmission systems.”

● **A. W. PEABODY**, Ebasco Services, Inc., Jackson, Miss.—“... performance of properly installed ground bed anodes of the correct type has reached a relatively high level. It is now possible to install anode systems with reasonable assurance that they will operate as expected. Nevertheless, much additional work and experience is required to increase available knowledge concerning ground bed construction with the goal of maximum life, minimum cost, and freedom from maintenance.”

● **R. C. ALDEN** and **F. E. SELIM**, Phillips Petroleum Co., Bartlesville, Oklahoma—“In a national emergency, as an additional supply of motor fuel, LP-gas could cushion the essential civilian demands and improve military products. As a means of conserving petroleum, LP-gas as a motor fuel can have a substantial effect.”

● **E. F. HART**, Boston Consolidated Gas Co., Boston, Mass.—“A safety thought heads the monthly report issued by our company. A recent thought, if applied by all of us, would reduce our accident record to a respectable standing among industry. This thought is: ‘A little care makes mishaps rare.’”

● **L. S. WEBSTER**, Public Service Electric & Gas Co., Newark, N. J. (subject “Equipment and Procedure for Service Renewals with Soft Copper Tube”)—“Experiences in the past have shown that temporary emergency repairs averaged \$75 per leak. Under this new method this figure can be reduced considerably and the leak stopped in a much shorter time. This type of renewal completed during regular work hours averages about \$60 per unit for permanent repair.”

Effect of the new heating load

By J. G. White

*The Peoples Gas Light & Coke Co.
Chicago, Ill.*

Demand for gas for space heating, particularly of family residences in metropolitan areas, has risen during the past several years to a point where many companies have been unable to meet demands placed on them. Consequently, those companies are looking toward the natural gas fields for additional gas supply as the most economical means of meeting the problem.

More natural gas is being made available to our customers throughout the country in a vast network of new pipelines. Larger storage facilities are being acquired close to the utilities' outlets; local distribution systems are being expanded to keep pace with the increased supply. In some cases, changes to a higher Btu gas have been made in manufactured or mixed gas territories. These programs are progressing rapidly and the great quantities of natural gas becoming available places the space heating activity in a most prominent position.

With the opportunities that lie ahead we must give careful thought to the planning and execution of a program that will most effectively maintain our top position and provide the type of service that will give us continued recognition as the superior fuel.

When the Association's Subcommittee on Work on Consumers' Premises met last November to map its program for the year 1951, one of the subjects discussed was the effect of this new house heating load on customers service. Obviously this would depend to a large degree on the type of customers service policy a company intends to pursue. The policy would form the basis on which the company's service commitments are made and around which its practices and procedures are built and its employees are trained.

We find the policies of various companies at great variance because of the influence of many local conditions, such as size of the company, area served, combination companies

(gas and electric), Btu and types of gas, gas rate schedules, and many others.

The Peoples Gas Light and Coke Company of Chicago has been using a supply of natural gas in its mixed gas send-out for a number of years. The company is currently planning on procuring an additional supply of natural gas in the near future. I was asked to give a brief outline of the company's background and experience in house heating and an analysis of its customers service policy as a means of promoting discussion and comparison.

Natural gas was brought to Chicago and introduced into the system in October 1931. At that time the Btu content was changed from 540 manufactured gas to 800 mixed gas. The gas supply and distribution facilities were ample, but the market for gas for space heating required development.

The price of gas at that time as compared with other fuels was one of the principal obstacles to overcome. The company undertook the development of the market on the basis of gas being a superior fuel.

Initially the company made most of the appliance sales directly and contracted the installation work. As gas for space heating became more generally accepted, the equipment manufacturers entered the market and established their own sales outlets through which they sold their equipment directly and contracted for its installation. Recognizing this value of dealer sales outlets, the company gradually curtailed its direct selling activities in house heating equipment so that most of the sales are now being made by dealers.

During the time that the company was engaged in heating sales campaigns, its sales division maintained an engineering section staffed with employees experienced in the heating field. Their duties were: To aid the salesman by providing the necessary engineering service to customers in selecting proper equipment for their needs, assigning the installation work to the contractors, and testing and approving the installation prior to the payment of the contractor's bill. With this type of program, the company was in a position to exercise control over the quality of equipment and the proper performance of the installation work.

However, when the company curtailed its selling activities, it still recognized the need for continuing the engineer-

Abridged version of address at A. G. A. Distribution, Motor Vehicles and Corrosion Conference in Memphis, Tenn., April 16-18, 1951.

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ing section of the sales division for three important reasons:

(1) To continue engineering services to all customers contemplating installations of space heating appliances.

(2) To continue an inspection procedure on new installations to guard against sub-standard equipment being installed or sub-standard installation work being performed on the customer's premises.

(3) To maintain a company point of contact for all appliance manufacturers, dealers, and installation contractors. Purpose is to foster uniform understanding of the company's requirements with respect to equipment and installation work.

This last reason is significant. More than the generally accepted routine of employee and customer relations, it represents a specialized public relations field which is growing and will continue to grow as more and more manufacturers, dealers, and installers enter the house heating field.

It is natural for a manufacturer entering the territory for

stallation manual for gas fired heating equipment. This association appointed a committee to work with the company to prepare the manual. Upon completion, it became the rule for all of its contractor members performing the installation work. Much misunderstanding and controversy has been avoided by this single development of mutual cooperation.

The demand for gas for space heating became very pronounced during the early part of 1946. This was due to the fact that the price of gas remained the same while the price of competitive fuels, in accordance with general economic conditions, increased to the point where gas was no longer a "luxury" in terms of price. The applications from customers became so numerous that the company was placed in the position of having to request the issuance of a Limitation Order by the Commerce Commission. The order became effective in July 1946 and has been continued up to the present time.



Customer service call facilities (left) at Peoples Gas. Teletype machines relay special or emergency calls to district shops where they are dispatched by radio or telephone to servicemen in the field. (Right) utilization testing laboratory. Study results are discussed with manufacturers and resolved into procedures for training servicemen

the first time to contact the local gas company to learn something of its policies and practices. To that end, he is directed to the sales engineering section for the necessary information. The manufacturer, of course, is asked to provide certain pertinent information regarding his plans. This information includes engineering data of his equipment, A.G.A. listing certificate, intent with regard to stocking of parts, and the type of service he is prepared to give on replacements, etc. If found acceptable, the company will advise him in his merchandising program. It will assist him by arranging to have his equipment brought into the company laboratory for examination and test. Such test is not mandatory but is beneficial to the dealer.

When his equipment has cleared the test he can point to the fact that his equipment not only meets A.G.A. requirements but has been tested in the company laboratory and, therefore, has the company's endorsement.

Good equipment by itself, however, is not sufficient unless it has application and is properly installed. During 1945, the company entered into an agreement with the Heating, Piping and Air Conditioning Contractors Association of Chicago to jointly prepare an engineering and in-

The number of house heating customers as of January 1, 1946 was 35,000. During the five years which followed there were 40,000 additional customers added to the system under the terms of the Limitation Order. Presently the company is engaged in a program of bringing additional gas from the fields in Texas, part of which is expected to be available for the winter of 1951-1952. Since this supply will be limited, when related to customers desiring gas heat, the company will still be required to exercise control of the number of installations by the Limitation Order.

It must be borne in mind that a Limitation Order is merely an authorization by the Commission to aid the company to regulate and control the number of installations within their capacity to supply. The company must establish customer allocation and notification procedure and must also provide a follow-up procedure to detect and prevent unqualified customers from using gas for heating.

In our company, a register of prospective customers is maintained. Allocations are made on the basis of the date that the application was filed with the company with certain variations for the new buildings as provided in the Order.

When the company discovers, through a service call or

The Peoples Gas Light and Coke Company

PEOPLES GAS BUILDING, 122 SOUTH MICHIGAN AVENUE
CHICAGO 3, ILLINOIS Telephone WA6008 24000

To Our Space Heating Customers:

On and after December 1, 1950, there will be a charge for each of the following services when performed by The Peoples Gas Light and Coke Company:

Lighting gas heating plant	\$2.00
Turning off gas heating plant	2.00
Inspection of gas heating plant	8.00

Many customers are lighting and turning off their gas heating plants themselves, as the operations are simple and anyone can learn to do them. If you want us to light your plant, we urge that you have it done well before the arrival of cold weather. At that time our Servicemen will also show you how to light and shut off the plant so that you may do this yourself in the future. Many of our customers leave the pilot light on throughout the year since it helps reduce the basement moisture and permits the plant to be started on any cool day.

The inspection charge listed above applies, primarily, to central heating plants (boilers and furnaces) and covers the complete examination of the equipment and the work necessary to put it in good operating condition, but does not include any parts replacement. Experience has shown that such inspection may be needed about once every two (2) years on boilers and every three (3) years on furnaces. The best time to have this check-up made is in the mild weather or in the off heating season. Please give us 30 days advance notice when you request this inspection.

The service charges will be billed on your regular gas bill and will not be payable to our Servicemen who perform the service. The above charges apply only to the services described herein. We will continue to make burner adjustments and emergency calls without charge.

We request your cooperation so that the scheduling of space heating appliance service calls will result in the most effective and convenient service for you.

YOU CAN DO IT BETTER WITH GAS

IF IT'S DONE WITH HEAT
YOU CAN DO IT BETTER WITH GAS

Copy of letter sent to all space heating customers of The Peoples Gas Light & Coke Company announcing change in service policy

by observing the meter readings, that the customer has installed gas heating equipment without the required authorization, it takes action immediately to have the equipment disconnected or discontinues the supply of gas. Legitimate dealers and installers will cooperate with the company by asking the customer to produce the company's letter qualifying them for gas heat before entering into a contract. However, they will ignore such formality if there is any indication that the company lacks the determination or the capacity to enforce strict compliance of the provisions of the Limitation Order, either in its allocation system or in its program to take firm and prompt action against violations.

Not so long ago, the addition of 40,000 heating customers over a five-year period would represent a rather satisfactory accomplishment. But with the current market it would not be unusual, when the gas supply is made available, to add many more than that in a single year. Here lies the danger of an influx of unqualified equipment which does not meet the requirements of A.G.A. or the company.

Why some people fail to seek out the well established and responsible business concerns to purchase their heating equipment is difficult to understand, but it has been the experience of many companies that such is the case. It likewise follows that when a large number of installations are made in a short period of time, the installation work is likely to be performed by persons not properly trained in the know how of gas heating equipment. The company, of course, not only reserves the right, but considers it an obligation on its

part to discontinue or withhold the supply of gas to any appliance installation which is deemed by the company to be unsafe.

The heart of the company's program with respect to new installations is: protection of the customer, protection of the company, and protection of the market for qualified manufacturers, dealers, and installers.

The customers service policy of our company pertaining to gas heating appliances is divided into three general parts. The first part deals with the services provided either directly or indirectly, up to and including placing the equipment into operation. It is quoted as follows:

"The company will provide, without charge, an engineering service to customers contemplating the installation of space heating appliances, and will cooperate with Appliance Manufacturers, Dealers, and Installation Contractors to assist in the selection of adequate equipment and to insure safe and proper installation. Upon completion of an installation, the company will light the burners, make the necessary combustion tests, check the controls to insure safe and efficient operation, and instruct the customer in the operation and care of the appliance."

In carrying out this part of the policy, company procedure is briefly described as follows:

(1) When the customer is notified by the company that he is entitled to install gas heating equipment under the terms of the Limitation Order, he is also advised by letter that the company will provide an engineering service, if he desires it, to assist him in the proper selection of gas heating equipment.

(2) Dealers and manufacturers are requested to give the company notification immediately upon entering into a contract with the customer.

(3) When the notification indicated under No. 2 is received, a representative from the engineering section, sales division, will call at the customer's home to survey the premises. The heat loss is determined, the type and design of the heating plant and its distribution system is noted, the chimney is inspected and the venting requirements considered, gas piping and flue pipe sizes are checked. The necessary orders are issued to have the proper size meter installed.

(4) The district shop will make every effort to install the proper size meter and provide a "T" opening where necessary in advance of the piping work of the installing contractor.

(5) The installing contractor will notify the company upon completion of the installation. The company will make a call promptly to light the pilot and place the equipment in operation, at which time an examination is made to see that the chimney is clear, flue pipe is properly installed, and the installation conforms with established standards.

(6) The sales engineering section and utilization testing laboratory will render any assistance to the installing contractor or district shop to bring the job to a successful conclusion.

The above probably represents the ultimate that any company can do in its efforts to insure safe equipment and installation work in the homes of its customers.

In planning for the future, the first consideration would be whether the company's personnel (Continued on page 48)

Frequency and severity rates for the gas utility industry show marked improvement

Employee accidents at postwar low

The gas utility industry in 1950 experienced its lowest accident frequency rate since the end of World War II. At the same time, the accident severity rate for the year was the second lowest registered by the industry since 1929. This marked the third successive year that both frequency and severity rates have declined.

Data for the 1950 report are based on returns from 423 gas utilities and pipeline companies, representing approximately 90 percent of the employees in the manufactured and mixed gas branch of the industry and 92 percent in the natural gas branch. These returns show that the industry's accident frequency rate declined approximately 11 percent from a year ago to a new figure of 16.03 injuries per million manhours of exposure. Severity rate for the gas industry in 1950 declined to 0.79 days charged to disabling injuries per 1,000 hours worked.

Total number of fatalities reported by the industry was 20, compared with 31 in 1949. This represented the third lowest number of reported fatalities in the 22 years since the Accident Prevention Committee of American Gas Association has been soliciting such data. (A total time of 6,000 days is charged to each fatality. Therefore, in any year in which the number of reported fatalities is low the severity rate in turn will be low.)

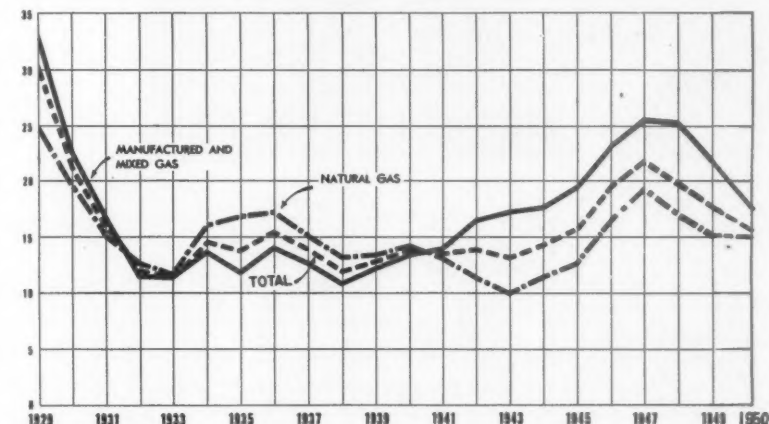
Accident record of the natural gas branch of the industry showed a slight increase from 15.22 disabling injuries per million manhours worked in 1949 to 15.46 in 1950. This was due partially to the fact that several large utilities, formerly distributing manufactured and/or mixed gas, have changed over to the distribution of natural gas during the past year or two. When such changeovers occur the utility or utilities in question are placed in the branch of the industry in

which sales for the year predominated. Thus a manufactured gas company, which changed its operations during the year and whose manufactured gas operations accounted for approximately 49 percent or less, and natural gas operations of 51 percent or more, would be classified as a natural gas company. Insofar as their accident experience relates

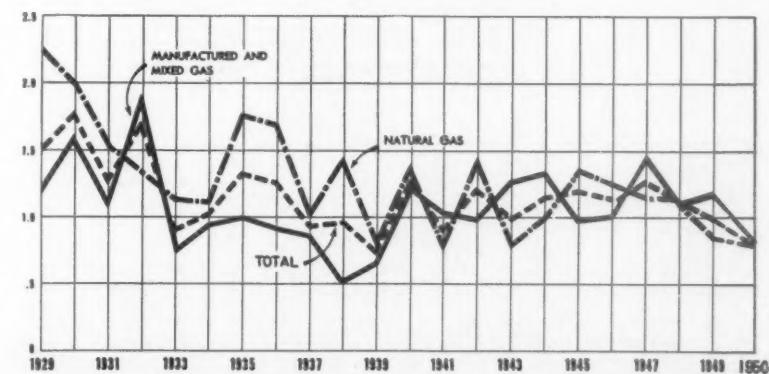
partially to manufactured gas operations and the likelihood that these are usually higher than those experienced by natural gas companies, it is possible for these changeover companies to influence the rates of the natural gas industry to an extent that they show a slight rise.

The 1950 frequency rate of 17.32 for the manufac- (Continued on page 46)

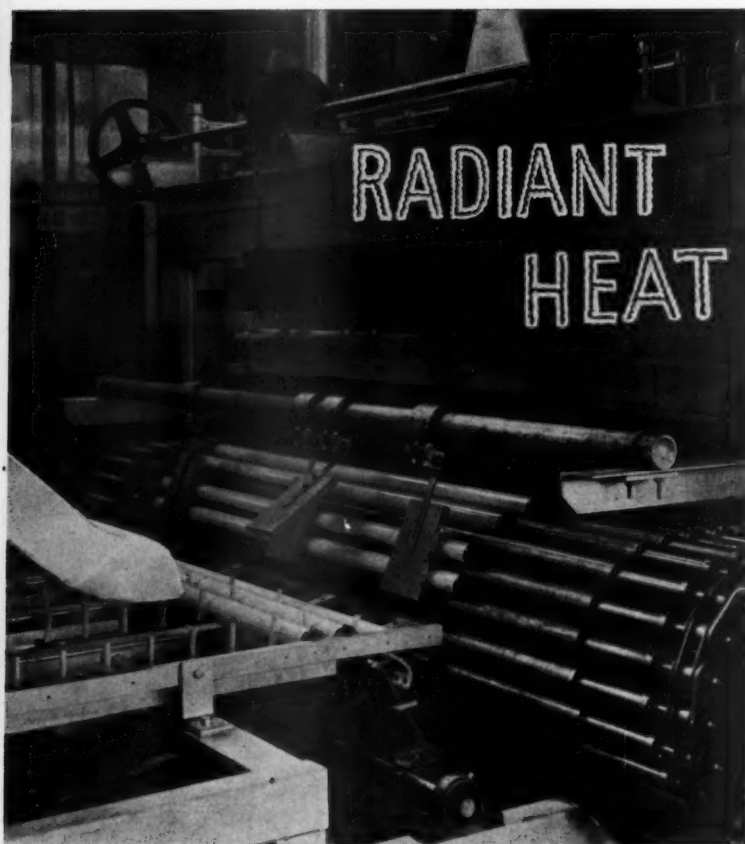
1929-1950 Accident rates of the gas utility industry in the United States by kind of gas



FREQUENCY RATES Number of disabling injuries per 1,000,000 hours worked



SEVERITY RATES Number of days charged due to disabling injuries per 1,000 hours worked



RADIANT HEAT—workhorse of the glass industry

By ROBERT C. LeMAY

Selas Corp. of America
Philadelphia, Pa.

The glass industry's increasing use of radiant gas heating has been responsible for additional gains in shortening heating cycles and improving product quality. Advantages of this relatively new working tool include production increases, fuel savings, reduction in equipment size and decreased loss of ware.

Throughout all industry, heating engineers have attempted to reduce fuel requirements, time cycles and equipment sizes toward theoretical minimum. In many fields this effort has been notably successful. The old rule of thumb that steel to be hardened should be heated one hour per inch of thickness has been discarded almost everywhere. The same material is now heated for forging in minutes. High speed ink drying now permits fine quality four-color printing on coated paper, in a single pass through the presses. New enamels are now completely baked in one-tenth the former time. Tubular heaters and steam boilers are built to only a fraction of their former sizes.

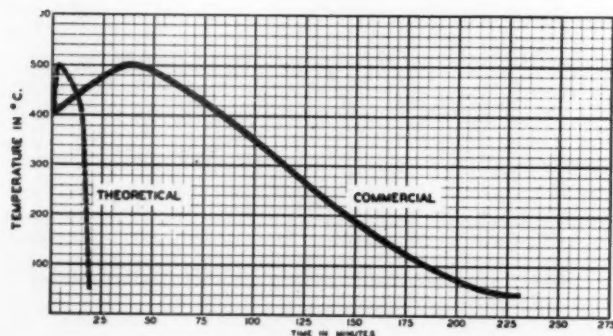
In contrast to the foregoing accomplishments, much heating equipment in the glass industry has remained bulky, time cycles are generally long and fuel requirements usually high. Theoretical glass annealing cycles can be computed from accepted formulas, but often are shorter than commercial annealing cycles by ratios greater than one-to-ten. When commercial cycles are long, equipment size and fuel requirements usually must be proportionately large. Figure 1 shows

Abridged version of paper presented at A. G. A. Sales Conference on Industrial and Commercial Gas in Washington, D. C., April 2-4, 1951.

Fluorescent lamp tubes (above) emerging from radiant gas roofs. Figure 1 (right) shows theoretical and actual heating time requirements for two types of glass different

OPERATION	LOW EXPANSION (BOROSILICATE) 3/8 INCH THICK		LIME GLASS - (NO. 10 CODE) 1/8 INCH THICK	
	THEORETICAL	COMMERCIAL	THEORETICAL	COMMERCIAL
PREHEAT FROM INITIAL CONDITION TO TEMPERATURE LOG 13.0	1.0	41.0	0.5	2.0
SOAK AT LOG TEMPERATURE 13.0 (INSTANTANEOUS ANNEALING POINT)	2.0		0.5	
ANNEAL THROUGH CRITICAL RANGE LOG 13.0 TO STRAIN POINT	10.0	29.0	0.8	10.0
COOLING FROM STRAIN POINT TO HANDLING TEMPERATURE	9.0	170.0	0.4	20.0
TOTAL	22.0	240.0	2.0	32.0

COMPARISON OF ANNEALING CYCLES IN MINUTES
THEORETICAL VS. COMMERCIAL OF GLASSES SHOWN



GRAPHIC COMPARISON OF ANNEALING CYCLES.
THEORETICAL VS. COMMERCIAL FOR LOW EXPANSION
BOROSILICATE GLASS 3/8 INCH THICK

Figure 2. Compar-
ative time-temper-
ature curves for
one of the types
of glass in Figure 1

the glass industry

theoretical and actual heating time requirements for two types of glass. Figure 2 shows comparative time-temperature curves for one of these types. Both have been taken from H. K. Richardson's address before American Ceramics Society, as published in their Bulletin of January 15, 1950.

In fairness to the glass industry, it must be realized that their materials are difficult to heat. Common glass is a relatively poor heat conductor and is quite susceptible to breakage from uneven thermal stresses. Always a major problem, loss from this cause is one form of "shrinkage"—an industry term meaning loss of ware during production, from whatever reason. It is the attempt to minimize "shrinkage" that has always been responsible for prolonged heat treating cycles. These long cycles and small temperature differentials have served a purpose in minimizing strains within the ware.

During recent years, forced convection has been popular as a uniform heating method, employing relatively low thermal differentials and high rates of air flow, well distributed. Most glassware, however, has *non-uniform* heat requirements. For example, to bring a heavy section and a thin section to the same temperature requires more heat for the heavier part. If typical convection heating is used, the thin section rises in temperature faster than the heavy section. The differential thermal expansion which results creates additional strain in the ware. This, of course, increases both likelihood of "shrinkage" and the burden on annealing equipment. Eventual uniform temperatures must be obtained by prolonged "soaking" at heat.

The alternative method is what might be called *proportional* or *pattern heating*. In this method, heat is transferred in a

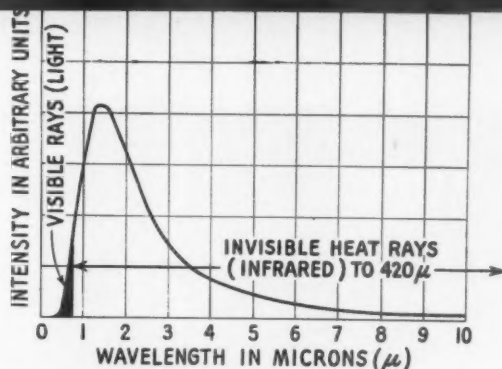


Figure 3. Successful use of radiant heat in the glass industry requires rather careful use of the electromagnetic spectrum, portion of which is shown at left

RADIANT ENERGY DELIVERED BY TYPICAL RADIANT GAS BURNER

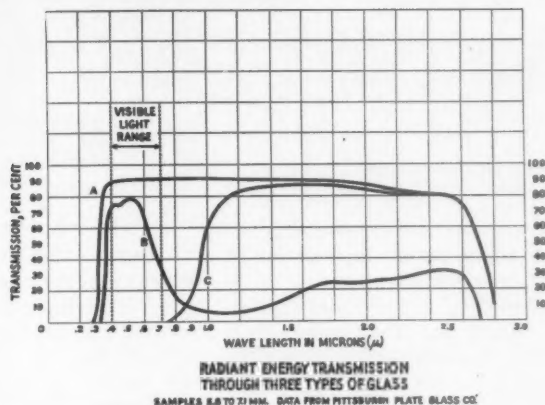


Figure 4. Transmission by three different types of glasses with comparable thicknesses but with different analyses

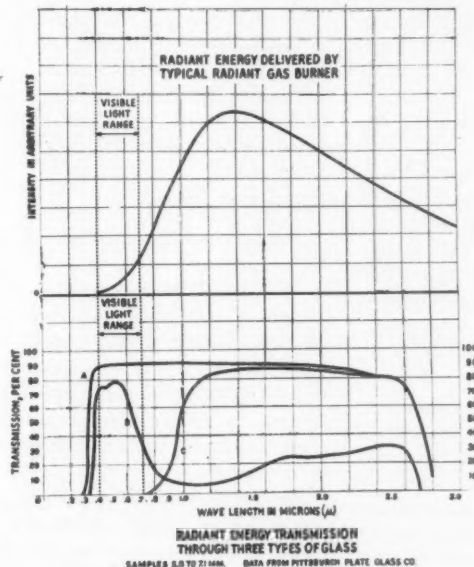
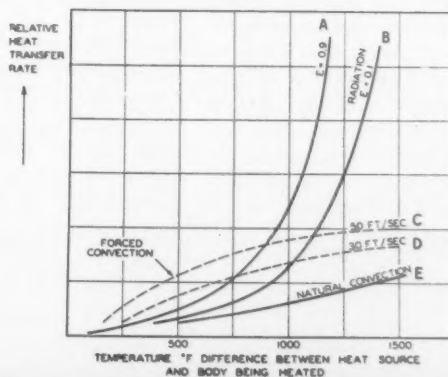
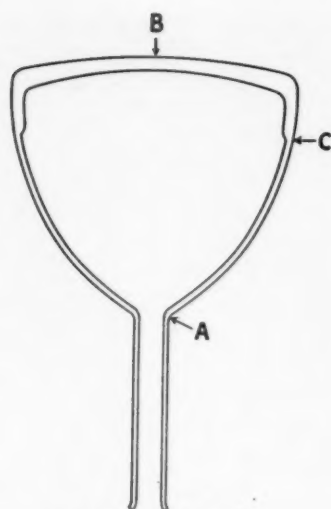


Figure 5. Same glass transmission curves plotted with the segment of radiant burner emission which lies in the same range—from 0.3 microns

Figure 6. Graphic comparison of transfer rates developed through radiation, forced convection and natural convection





CROSS SECTION OF TYPICAL ALL-GLASS TV PICTURE TUBE

manner which permits each section of the ware to receive it at a rate more nearly proportional to its particular requirement. Where this is successful, fewer strains are developed, and all parts of the ware reach the same temperature more quickly.

To recognize and accomplish this objective required a new approach to heating glass. Obviously a new heating method was also necessary. For the requirements of proportional heating, the radiant gas burner is well suited. Patterned arrangements of these burners permit heat sources to be matched with heat requirements. Radiant energy has the highest transfer rates and is free from retarding effects of transparent surface films. Of particular significance is the fact that these burners release part of their heat within the glass itself, as will be explained later.

Many types of radiant gas burners are in use today. Luminous flame and certain "atmospheric" burners can also be classed as radiant. However, this discussion will be limited to those whose radiant energy is developed by forcing carefully proportioned and compacted gas-air mixtures along refractory surfaces, where combustion heats those surfaces to incandescence. These burners are available in many styles and capacities and may be used in the open or built into heating panels or furnace brickwork. The absence of protruding flame has made this type of radiant burner very popular for use in close proximity to work which suffers from flame contact.

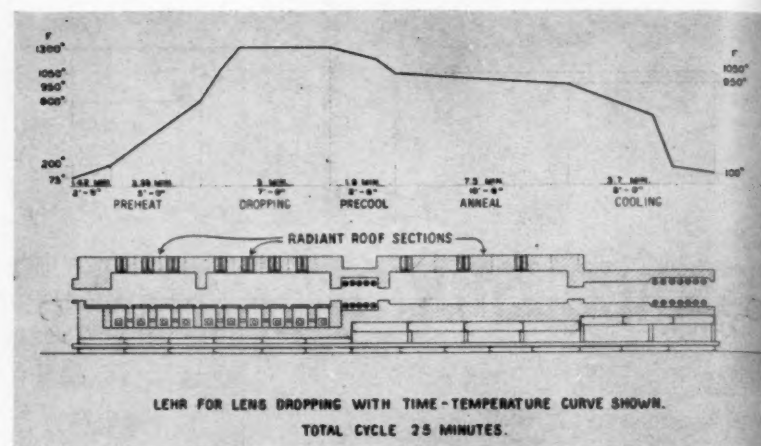


Figure 7 (left). Small non-impinging radiant burners are now used almost universally for sealing and cutting-off all-glass picture tubes. Figure 8 (above). Lehr utilizes sections with different patterns for preheating, dropping and annealing

Ceramic materials used in radiant burners are numerous. They should be selected for the particular application to give the best combination of high radiant emission, long life, low heat storage and low thermal conductivity. Where high temperatures will be experienced, the usual metal parts can be replaced by alloy or all-ceramic construction. Because of the small diameter or width of individual ports, and flame retaining qualities of hot refractories, most radiant burners possess wide turndown qualities.

Pattern Heating

Accurate gas-air ratio control is important because excess of either gas or air will reduce burner temperature. Furthermore, combustion equipment for "pattern heating" should permit turning individual burners down or entirely off without affecting gas-air ratio in other burners. In this way proper pattern adjustment can be made to suit the work being heated.

Radiant burners convert incoming fuel gas energy to useful radiant and convected heat. In addition—as in all gas burners—there is unavailable heat, better known as flue loss. We should think of the radiant burner as a source of all three. One difference from other burners, however, is that in these burners radiant heat accounts for an important part of the total. In well designed glass heating operations, radiant energy is of course first utilized as effectively as possible and then the hot burned gases are employed

for additional transfer by convection—frequently for preheating.

Successful use of radiant heat in the glass industry requires rather careful consideration of the electromagnetic spectrum, which contains in their proper relative positions all of the waves which transfer energy. These of course include light and heat rays, X-rays, radio and sound waves, and all the rest. Those in the range in which we are now interested are measured in microns, a micron being one millionth of a meter.

Figure 3 covers that portion of the electromagnetic spectrum where wave lengths are less than ten microns. It shows a curve indicating the distribution of radiant energy from a typical radiant burner, with maximum emission at this particular temperature at 1.4 microns. The visible light band is the shaded section between .4 and .7 microns, and it is readily seen that most of the burner's energy is invisible or infrared. Infrared, of course, is merely a name assigned to heat rays as a group. It is not a trade name registered by the electric industry. Included in the group are all heat rays, whether they come from the sun, an incandescent lamp, a radiant gas burner or a parlor steam radiator. They vary, however, in intensity, and in distribution of wave lengths.

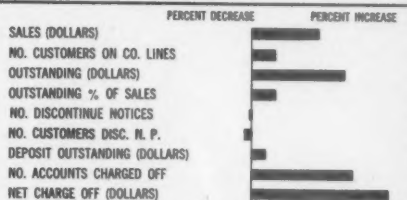
Radiant heat rays both change in intensity and redistribute themselves with changes in source temperature. As temperature rises, total radiation increases and shorter wave lengths become those of greatest (Continued on page 44)

Dollar sales rise again during 1950



CREDIT AND COLLECTION EXPERIENCE OF U. S. GAS AND ELECTRIC INDUSTRIES

JULY 1, 1950 — DECEMBER 31, 1950, COMPARED WITH SAME PERIOD FOR 1949



• THE CREDIT PICTURE •

• This is the fifth* in a series of semi-annual surveys of "The Credit Picture" conducted jointly by American Gas Association and Edison Electric Institute. The data presented below have been gathered during the past six months under the supervision of the Credit and Collections Committees of A. G. A. and E. I. Survey results are based on returns from 62 straight gas, straight electric and combination companies serving a total of 25,330,600 customers. Reports from these companies comprise a repre-

sentative sample of actual credit and collection experience in each of the country's nine census regions.

For many years, the gas and electric industries have published the amount of their sales. The Credit Picture was established primarily for the purpose of giving the industries a picture of the success or failure in getting in the money for those sales. There are many angles and contributing factors to the whole picture, but since the net charge off continues to increase at an abnormal rate, we shall focus our current attention on this part of the picture.

Gas and electric industry sales in the United States made another impressive spurt upward during the last half of 1950—the total was 11.1 percent higher than during the same period of 1949. Total sales for the first part of 1950 were 8.4 percent above the total for the first six months of 1949. In each of the nine census regions surveyed the rate of sales gain over the comparable period in 1949 was greater for the last half of 1950 than it was in the early part of the year. This, of course, is a healthy condition.

The amount of outstanding, therefore, increased, while the percentage of increase in out- (Continued on page 48)

* See A. G. A. MONTHLY, October 1950, p. 27; May 1950, p. 19; October 1949, p. 17; and May 1949, p. 19.

(JULY 1, 1950—DECEMBER 31, 1950) • INCREASE OR DECREASE OVER CORRESPONDING PERIOD—1949

	NEW ENGLAND	MID ATLANTIC	EAST NORTH CENTRAL	WEST NORTH CENTRAL	SOUTH ATLANTIC	EAST SOUTH CENTRAL	WEST SOUTH CENTRAL	MOUNTAIN STATES	PACIFIC STATES	UNITED STATES TOTALS
SALES	9.3	8.0	14.4	10.1	12.7	12.3	9.1	12.1	10.7	11.1
NO. CUSTOMERS ON CO. LINES	2.1	2.0	3.6	3.1	7.5	8.1	4.4	6.9	5.7	4.2
OUTSTANDING	11.0	17.2	13.0	20.1	15.5	32.6	16.1	27.5	12.9	15.8
OUTSTANDING % OF SALES	1.6	8.6	1.2	9.0	2.6	18.0	6.3	13.7	2.0	4.3
NO. DISCONTINUE NOTICES	— 2.7	— 10.7	— 1.4	8.4	4.2	19.3	29.3	22.8	9.0	— 0.5
NO. CUSTOMERS DISC. N. P.	— 2.6	— 14.1	— 3.3	0.5	18.3	23.4	50.5	37.4	13.7	— 1.7
DEPOSIT OUTSTANDING	— 2.3	— 9.5	9.4	3.0	14.4	10.3	3.2	4.9	— 1.8	2.6
NO. ACCOUNTS CHARGED OFF	— 4.1	20.6	8.4	14.0	10.8	30.9	17.1	21.9	31.0	17.5
NET CHARGE OFF	— 3.4	34.6	13.8	78.9	17.1	39.2	— 2.2	30.1	18.2	22.5



Ronald B. Duncan, defense coordinator, The Philadelphia Gas Works headquarters building, pointing to an area of devastation in hypothetical bombing

This microfilming exhibit was a center of interest for gas company executives, defense personnel and officers of employee organizations during special meeting on March 29

Philadelphia Gas Works personnel examining radio-activity detector which was demonstrated by Charles Mandeville, Franklin Institute



Philadelphia gas company employees learning the fundamentals of first-aid. Thorough training and frequent drills are needed to keep utility company disaster programs at peak efficiency. Adequate protection against sabotage and espionage is a basic "must"



A-bomb exercise alerts gas company defenses

This is the story of a large metropolitan gas company that has developed a singularly comprehensive defense program for protection of plant and personnel. It is also a good illustration of steps that can be taken by any utility whose defense program is threatened by a let down of interest or the suspicion that management is merely "crying wolf."

Addressing a special meeting on March 29 of company personnel interested in plant protection H. Bruce Andersen, vice-president in charge of distribution, The Philadelphia Gas Works Co., outlined the planning for protection which has been occupying for several months the attention of everyone interested in the area's civil defense. He described a recent test exercise which has stimulated interest of supervisors and rank and file alike by converting what had been exclusively paper work into the realm of partial reality. "In other words," he said, "rules and regulations for a game had been set up. Now we are going to play a practice game in our own back yard."

"At 5:35 AM on a morning not long ago, gas company defense headquarters received confidential notice of imminent enemy attack. Five minutes later air sirens indicated that the attack was imminent. Eight minutes later two bombs fell on our city and created the condition which we have been organizing in previous months to remedy when the time came. When the confidential alert was received our key personnel were notified and either remained at home or reported for duty as previously arranged. All other employees remained at home. The all-clear signal was received 60 minutes after the sirens announced the air raid."

"Within the next two or three hours, through civil defense channels and from sources of our own, we learned where

the two bombs had fallen and the extent of damage to company facilities, residences, schools, hospitals, fire houses, waterworks, etc.

"One of our two gas manufacturing plants had been destroyed and two of our outlying holder stations were inoperative. Although little damage was done to our underground system, well over 100,000 houses had been demolished and gas was escaping in the debris. We found the damage in one section of the city was so great that it required the discontinuing of gas supply into all that section even though half of it was still physically intact. Another section, remote from the one just mentioned, had been badly damaged. Gas had to be cut off from that section by closing valves and making other cut-offs around its boundary. These cut-offs and shut-offs were cared for by that part of our personnel who lived in the undamaged areas and who reported for duty throughout the day."

"This make-believe game was participated in by other utilities, by all city departments, and by city and state defense authorities. Its results were studied and discussed at a meeting of defense authorities a few weeks later. The effect greatly stimulated the thinking of our supervisors and rank and file on the importance of our plant protection."

Employees attending the dinner meeting at which Mr. Andersen spoke were shown a broad sample of emergency equipment that has been received or ordered by The Philadelphia Gas Works Company. The exhibit ranged from fire fighting equipment to special fencing, high-powered flood lights, and radioactivity detectors. All group leaders were shown a special microfilming display. Charles G. Simpson, Jr., director of the company's defense program, explained how the utility (*Continued on page 40*)



H. Bruce Andersen (right), gas company vice-president, explaining how distribution records are safe-guarded. Watching are (foreground) Major General N. D. Cota, executive director of the Philadelphia Defense Council, and his assistant, Colonel W. E. Fellman

Large expansion



A.G.A. GAS HOUSE HEATING SURVEY, 1951-53

State	COMPANIES INCLUDED IN SURVEY		Anticipated Additional House Heating Customers		Proportion of Industry Covered
	Residential Customers December 31, 1950	House Heating	'51-'52 Heating Season	'52-'53 Heating Season	
Total U. S.	20,406,689	8,129,439	919,020	811,014	90%
Alabama	157,158	94,885	10,324	8,254	95
Arizona	80,201	72,000	7,900	6,900	73
Arkansas	40,301	36,962	6,302	6,137	26
California	2,578,133	2,351,934	141,140	102,440	96
Colorado	154,158	126,470	9,300	8,750	91
Connecticut	336,029	13,065	2,274	4,038	97
Delaware	44,876	2,889	800	400	92
District of Columbia	161,534	43,358	3,876	3,591	100
Florida	116,774	4,200	4,103	3,675	68
Georgia	212,811	132,525	17,466	15,030	97
Idaho	0	0	0	0	0
Illinois	1,529,267	184,707	53,021	41,647	94
Indiana	488,348	58,353	27,175	29,471	89
Iowa	220,946	74,704	24,149	28,920	80
Kansas	230,694	198,548	15,975	14,960	67
Kentucky	221,390	118,074	18,113	8,037	90
Louisiana	300,054	294,785	23,777	24,032	78
Maine	23,273	944	200	200	58
Maryland	357,825	58,675	20,365	23,433	97
Massachusetts	760,039	42,958	7,156	15,822	85
Michigan	1,008,715	363,940	26,944	13,546	89
Minnesota	303,188	109,510	16,760	16,500	94
Mississippi	95,980	95,593	5,769	4,960	70
Missouri	510,933	227,238	46,263	37,437	93
Montana	36,456	34,358	1,355	1,110	54
Nebraska	158,556	89,844	13,295	10,885	93
Nevada	0	0	0	0	0
New Hampshire	18,468	531	170	513	52
New Jersey	1,114,646	54,219	12,338	12,238	97
New Mexico	11,792	11,296	745	742	14
New York	3,335,805	291,607	49,354	52,120	100
North Carolina	15,398	184	185	150	23
North Dakota	20,163	7,700	260	260	92
Ohio	1,481,074	758,401	102,982	84,414	96
Oklahoma	352,911	352,326	17,196	16,869	87
Oregon	90,195	21,720	N.a.	N.a.	90
Pennsylvania	1,530,566	397,167	84,259	74,286	88
Rhode Island	150,314	8,588	2,750	2,800	96
South Carolina	23,421	2,362	410	516	63
South Dakota	25,968	17,481	3,600	1,900	74
Tennessee	134,798	63,410	12,085	13,035	91
Texas	999,528	992,127	67,634	67,126	79
Utah	76,469	42,000	4,800	N.a.	100
Vermont	11,918	3	N.a.	N.a.	58
Virginia	171,651	29,752	7,018	6,964	79
Washington	54,434	7,574	1,388	96	83
West Virginia	248,017	181,019	12,190	10,727	85
Wisconsin	390,299	41,073	35,064	35,293	95
Wyoming	21,215	18,380	790	790	77

Striking evidence of the nation's high regard for gas househeating is provided in returns from a new survey conducted by the Bureau of Statistics, American Gas Association. Estimates from 290 gas utility companies, expanded to represent the entire industry, show that about one million new house heating customers are expected to be added during the next heating season. Some 900,000 additional users of gas for house heating are anticipated for the following season. Expanded returns indicate that approximately nine million dwelling units in the United States were using gas for all house heating purposes on January 1, 1951.

This latest report covers companies surveyed in a similar study released last summer* and reflects changed conditions since the start of hostilities in Korea. Earlier release date of the new study is expected to increase the report's usefulness to gas appliance manufacturers in their production planning.

This new survey indicates that the gas utility industry as a whole fulfilled its goal with respect to new gas house heating customers during the recent heating season. Furthermore, despite possible material shortages and delayed shipments of equipment, the industry since last April has increased its anticipations of new gas house heating customers for the next two heating seasons.

The 290 gas utility companies included in the new survey were serving 20,407,000 residential customers as of January 1, 1951, or 90 percent of all residential gas utility consumers in the United States. Some 8,129,000 of these customers were being supplied with gas for all house heating purposes. As of the beginning of this year, these companies expected to serve an additional 919,000 consumers with gas for house

* See A. G. A. MONTHLY, September 1950, p. 18.

predicted in gas house heating

heating during the 1951-52 heating season. (This is a substantial upward revision of the 853,000 expected new installations these same companies reported for the same period during the previous survey last summer.) An additional 811,000 consumers are expected to be added during the 1952-53 heating season. In addition, six Canadian companies reported that they expect to add 3,900 and 3,700 house heating customers during each of next two heating seasons.

Pipeline growth

The heightened expectations were concentrated primarily among gas companies in California, the Middle Atlantic and the East North Central States. Some of the companies in the West South Central States adjusted their plans downward. These trends are in part a reflection of the completion of several major pipeline systems and approvals which have been granted for expansions or new lines to the Chicago, Detroit, New York and New England areas. Some of the companies affected had already anticipated the completion or approval of these projects, so that their recent estimates were not revised materially. Several other companies did report substantial changes.

This survey continues to show, wherever possible, the anticipated additions segregated for each reporting company between new construction and existing structures, and by type of heating equipment. However, state totals have been prepared only for those items which the majority of companies were able to segregate with a reasonable degree of accuracy. As the 1950-1951 heating season was nearly over at the time of publication, no statistics are shown for that period. Readers interested in these statistics should refer to last year's publication.

The pattern of gas house heating saturation obviously has not changed materially since the last survey. Highest saturation occurs in the natural gas producing areas of the Southwest and California, and the lowest in the manufactured gas areas of the Northeast; (see the accompanying summaries by states). Comparisons for 1950 and 1949 can be made by reference to the previous edition of A. G. A. gas house heating survey and to *Gas Facts*, 1949, respectively.

Each company participating in the previous survey was requested to notify the A. G. A. Bureau of Statistics concerning any changes in its existing or anticipated customers that had occurred between April 1, 1950 and January 1, 1951. It was assumed therefore that no substantial modifications had occurred for the non-respondents. Their previous data therefore has been reprinted and this fact footnoted appropriately in each applicable case. The effect has been to understate the total residential and househeating customers of the companies represented in the survey, as the non-respondents undoubtedly experienced growth in these two categories since last April.

When attempting to develop market potentials for gas house heating, it is patently fallacious to assume that all residential gas consumers represent potential prospects for gas house heating. Many of these consumers live in apartment houses or similar structures that are not adapted to individual heating installations. This is particularly true of such large cities as New York and Chicago.

In an effort to determine a more realistic physical potential, the individual utilities were requested to provide an estimate of the number of dwelling units in their respective service areas, including present gas heating installations, which could be individually metered and heated

with gas. Many utilities supplied this information, which is tabulated on line 5, "Total Potential Residential Househeating Customers as Reported by Utilities." However, other companies were unable to supply estimates so that, unfortunately, it was not feasible to develop state summaries for this question.

This publication again includes the prices of gas for house heating as well as those for the principal competitive fuels (as of January 1, 1951) in the largest city served by each respondent gas company. It should be remembered that these prices are approximate, subject to change and seasonal variations. They do not reflect possible local variations in free servicing, nor do they indicate possible qualitative differences in the liquid or solid fuels. Nevertheless, these prices are useful for general comparisons and analyses of gas heating potentials in various areas. More precise studies, of course, would require more refined and additional data, including estimates of relative fuel efficiencies.

Further information

Gas heating equipment manufacturers of the Gas Appliance Manufacturers Association are again requested to utilize this survey rather than to impose the unnecessary burden of answering repetitive questionnaires upon the responding utilities. It is suggested also that manufacturers desiring further information communicate with the A. G. A. Bureau of Statistics rather than with the individual utilities.

One copy of the copyrighted survey report is being sent to each cooperating utility and to interested manufacturers of gas house heating equipment who are members of American Gas Association or Gas Appliance Manufacturers Association.

Simplicity and easy operation are prime requirements of a stores accounting system

Accounting for pipe, poles, etc...

By JOHN A. WILLIAMS

Manager, System & Methods Dept.
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Syracuse, N. Y.

● The following feature article was written exclusively for the A. G. A. MONTHLY as a contribution of the Editorial Committee, A. G. A. Accounting Section. Mr. Williams is a former chairman of the Accounting Section.

Pipe, poles, potheads—caps, couplings, clamps and thousands of other items, large and small, are purchased, stored and issued in the course of a month's operation of a large gas and electric utility. Accounting for these transactions along the way has always been costly and troublesome.

An efficient stores accounting system should provide for these three features.

(1) Prices for each individual item should be tied into a value control which in turn is kept in balance with general ledger figures.

(2) There should be balanced quantity control for use in reconciling physical inventories.

(3) A chronological record should be maintained of receipts, issues and quantities on hand for purchase control, for transfer of material (where there are multiple storerooms) and for materials control.

In our company we have developed a new type of "visible" ledger for recording these transactions which seems to meet the three requirements satisfactorily. Under this system, a chronological record of each month's transactions by class of entry for each stores

Figure 1. Two ledger cards are used for posting items: The small one (left) for each storeroom's supply of each item, the larger for summary posting. Figure 2. Summary card figures, collected on this master form, give an over-all picture

[illegible]

item for each storeroom is posted on ledger cards by bookkeeping machines.

Ledger Cards

Two sizes of ledger cards are used as is shown in Figure 1. A small ledger card (5" x 10") with a blue border is used for quantity posting only. It is used for each storeroom for each item where that item is located in more than one storeroom. A large ledger card (7" x 10") with a red border is used for summary posting with quantity and value of those items that are located in more than one storeroom. Another large ledger card, identical except that it has a green border, is used for posting quantity and value for those items that are located in one storeroom only.

Cards are filed in "visible" files so that a space one inch wide on the right hand side of each card is visible for reference purposes. Cards are arranged in symbol number order (there is a separate symbol number for each item). All ledger cards with a particular symbol number are filed together with the accompanying summary card (large card with red border) following immediately thereafter.

Figure 3 shows how the cards are arranged in a typical panel, with quantities visible for the small cards and values visible for the large cards. Ap-

proximate capacity of a panel is 20 cards and the approximate capacity of a tray is 100 panels—a capacity of about 2,000 cards per tray.

The storeroom number and the stores item symbol number are entered on all cards. A description of the item is entered on large cards and also on the small cards where deemed necessary or desirable. The unit of measurement, other than "each," is entered on all cards. The division-wide average price per unit is entered on all large cards and is changed whenever material is received and recorded. Minimum and maximum quantities are shown where it is considered necessary to maintain such figures for a stores item.

Material movement forms

All movements of material are reported on one of four forms: (1) material received form, (2) material issue form, (3) material return form, or (4) material transfer form. A material issue form with typical entries is shown in Figure 4. The other three forms are similar in appearance to this form with such variations as necessary to accomplish each form's particular function.

As forms are received daily in the stores accounting section from the several storerooms, they are checked with the accompanying transmittals to see

that all forms are accounted for. Then they are inspected closely for reasonable legibility, for correctness of symbol numbers, and general accuracy, etc.

A tabulating card is punched for each store's item received, issued, returned or transferred, which is used for both store control and for material and supplies distribution. These cards are priced and extended on automatic machines and are summarized for the month with a summary card being punched for totals of each item for each storeroom for each type of transaction. Figure 2 shows a summary of these summary cards with totals for net issues and returns, which is used as the medium for posting to the ledger cards. Similar summaries are prepared for receipts and for transfers. After these summary cards have been prepared the detail cards are released to the material distribution section where they are sorted into account number order and summaries are then prepared for material and supplies charges to various operating and balance sheet accounts.

The quantities, only, for items in more than one storeroom are posted

The 1951 National Conference of Electric and Gas Utility Accountants was held in Chicago last month shortly after the A. G. A. Monthly went to press. Consequently, an illustrated story of the conference will appear in the June A. G. A. Monthly.

1 MATERIAL ISSUE FORM 225-6		DATE ISSUED 2/15/51	STORE NO. 400	ISSUE NO. 32686
TAX DISTRICT Rensselaer - 7102		ACCOUNT NO.		
QUANTITY	DESCRIPTION OF MATERIAL	SYMBOL NO.		AMOUNT
140'	Seamless steel pipe	60 01 397	463.10	2965 83 0000
12	Pressure Couplings	60 99 192	"	" " " "
DESCRIPTION AND LOCATION OF WORK Est. gas main Rensselaer Ave.		APPROVED ST.C. RECEIVED JMR.		

Figure 4. Material is issued on written requisition

MATERIAL AND SUPPLIES SUMMARY FORM 225-6						
DATE September 25, 1950						
COMPANY Niagara Mohawk Power Corporation DIVISION Eastern						
LOCATION	STORE NO.	BALANCE NORTH ENDING Sept. 1950	BALANCE NORTH ENDING Aug. 1950	BALANCE NORTH ENDING Sept. 1949	INCREASE OR DECREASE FOR PAST PERIOD	INCREASE OR DECREASE LAST YEAR
10-Bldg. Mat'l & Supplies		9,102.37	8,563.87	2,559.27	538.50	756.90
15-Prod. Equip. Mat'l & Supp.		166,847.77	164,734.90	148,212.95	2,112.87	8,626.02
20-Gen'l Equip & Supplies		46,141.67	51,770.13	43,044.35	3,628.46	5,097.42
25-Salvage Mat'l & Equip		8,971.99	2,794.49	2,083.33	6,877.50	5,906.66
90-Gen & Elec. Appliances		19,991.25	18,827.32	12,673.72	1,163.93	7,217.53
Total		274,044.19	256,789.81	206,522.41	15,736.28	47,161.78

MATERIAL AND SUPPLIES SUMMARY FORM 225-6						
DATE September 25, 1950						
COMPANY Niagara Mohawk Power Corporation DIVISION Eastern						
LOCATION	STORE NO.	BALANCE NORTH ENDING Sept., 1950	BALANCE NORTH ENDING Aug., 1950	BALANCE NORTH ENDING Sept., 1949	INCREASE OR DECREASE FOR PAST PERIOD	INCREASE OR DECREASE LAST YEAR
Albany	Matb 400	400 795 04	380 944 75	404 118 56	19 850 26	83 823 52
Schenectady	Distb 401	29 686 33	31 501 87	17 349 42	1 315 54	18 336 91
Glensville Gas Plant	560	6 792 14	6 792 14	4 775 43	-	2 016 71
Rulson Gas Plant	561	4 212 55	4 895 40	3 946 72	642 85	265 83
Schenectady Gas Plant	563	22 421 96	22 400 69	24 944 06	21 27	2 522 10
Total		874 004 19	856 749 81	886 922 41	15 336 38	47 161 78

Figure 5. Monthly analyses (above) compare current balances with those of the previous month and of the corresponding month of last year. Figure 6 (below). Physical and book inventories are reconciled on 12" x 11" cards

INVENTORY FORM 225-7		STORE NO. Schenectady		DATE Feb. 15, 1951		SHEET NO. 68	
DESCRIPTION	SYMBOL NUMBER	QUANTITY		UNIT PRICE	ADJUSTMENT		
VALVE GLOBE 1 IN	000410	12	12				
VALVE GLOBE 2 IN	000421	5	6	1 10 30		10 30	
VALVE PLUG SC 250 LB 3/4 IN	000434	15	15				
ELL 1 1/2 INK W O V R V O	000544	52	52				
ELL W O B N R V O 1 1/2 IN	000549	92	92	1 54		1 54	
ELL FELD 2 IN 45 DEG	000549	31	31				
APPROVED J.M. Evans R.W. Smith		ENTERED BY CLERK C.M.K.		ENTERED BY BOOKS A.D.R.		APPROVED J.F. Willis VICE PRESIDENT	

first to the small ledger cards from the amounts shown in column 5 of Figure 2. Then, as a separate run, the quantities and values are posted to the large ledger cards from the amounts shown in column 7 of Figure 2. At the time of posting the operator makes a visual check between the price listed in column 1 of Figure 2, with the last average price shown on the ledger card, and corrections are made for any discrepancies discovered.

The machine has a two-color ribbon and all items shown on Figures 1 and 3 that have a minus sign after them are printed in red, with all other figures printed in black. Inasmuch as the items on Figure 2 are arranged in symbol number order, the posting is "straight away" posting which is much faster than "dribble" or "random" posting.

Controls are maintained by groups of materials, and by storerooms. Quantity balances shown on the small cards are added and the totals are reconciled with the quantity balances on the large cards. The value balances shown on the large cards are added and the totals are reconciled with the materials group control balances.

Reports are prepared at the end of each month. They show outstanding balances by groups of materials and by storerooms, with comparisons with figures for the preceding month, and with figures for the corresponding month of the preceding year (see Figure 5). These reports give an over-all picture of the condition of the company's investment in materials and supplies, both as to groups of materials and as to individual storerooms.

Inventory

The acid test of a stores accounting system comes when inventories are to be reconciled, but ahead of that, of course, the inventories themselves must be taken. Under our machine stores accounting system we maintain a set of master price cards. These, in addition to punching for the symbol number and price, carry alphabetic punching for the name of the item itself and a code as to each storeroom where the item is located. Several weeks in advance of the time a particular storeroom is to be inventoried, the price cards for that storeroom are sorted out of the "master pack" and are used to prepare the inventory sheets.

(Continued on page 45)

Mass feeding methods and selling to government agencies top conference discussions

How to sell in the emergency

More than 200 industrial and commercial gas men gathered in Washington, D. C., last month for what proved to be the largest annual sales conference held by the Section in recent years. For three days, April 2-4, the Hotel Shoreham served as headquarters for stimulating discussions of major topics.

First day of the A. G. A. conference was devoted to commercial gas subjects. Donald E. Dillon, The Brooklyn Union Gas Co., brought the conferees up-to-date on his company's use of immersion coil storageless water heating in the restaurant field. L. J. Fretwell, Oklahoma Natural Gas Co., Tulsa, discussed the competitive position of gas and electricity in the commercial cooking field. He laid particular stress on the need for stronger efforts to sell gas fuel, gas equipment and services.

How to improve relations with local restaurant groups was told by Robert J. Wilson, an official of both the Washington Restaurant Association and the National Restaurant Association. "What has been done in Washington to improve relations between the gas industry and the restaurant association, can and should be done in every community in the United States," he declared.

E. V. Fineran, Washington Gas Light Company, opened the afternoon session with a talk on appliance servicing. He emphasized the need for servicing at this time when parts are becoming in short supply. Other speakers reiterated the need for better servicing of both commercial and industrial equipment by gas companies. They called for still stronger efforts to maintain a continuity of gas service.

Next event on the program was the premiere showing of "What So Proudly We Hail," a 40-minute stage presentation with characters who symbolized eight pertinent advantages of gas for commercial cooking. A spirited dialogue



Papers were presented on Commercial Gas Day by (left to right) E. V. Fineran, Washington Gas Light Co.; D. E. Dillon, The Brooklyn Union Gas Co.; "Bob" Wilson, executive vice-president, Washington Restaurant Association, and L. J. Fretwell, Oklahoma Natural Gas Company



Memberships in "Hall of Flame" were conferred upon Paul W. Craig (left), Equitable Gas Co., Pittsburgh; L. J. Fretwell, Oklahoma Natural Gas Co.; A. D. Frydendall, The Peoples Gas Light and Coke Co., Chicago; F. A. Kaiser, Detroit-Michigan Stove Co.; Fred M. Reiter, The Dayton Power and Light Co.; H. B. Wilson, The Brooklyn Union Gas Co.

A two-part paper on selling to the government was presented by W. H. Loving (left), Washington Gas Light Co., and James R. Lee of the GAMA Washington office



Speakers on Industrial Gas Day included (left to right) Dr. Horace Graver, Battelle Memorial Institute; Oscar Byron, J. O. Ross Engineering Corp.; Robert C. LeMay, Selas Corp. of America, Philadelphia; J. P. Leinroth, Public Service Electric & Gas Company



Four conference veterans discuss the gas business in their respective territories. They are, in the usual order, Ralph L. Manier, Niagara Mohawk Power Corp.; Carl Wierum, The Brooklyn Union Gas Co.; Charles C. Krause and F. D. Macneal, Consolidated Gas Electric Light & Power Co., Baltimore

was rendered by two off-stage voices as the characters representing the various advantages went through their paces in pantomime. This initial presentation was given to acquaint gas company men with a new "package" that will soon be available for those companies which may have a need for something to present before local restaurant, hotel or other volume feeding groups. A brochure will be sent out shortly setting forth the mechanics of this "playlet" and how it can be used by gas companies in all localities.

Tuesday was devoted entirely to subjects of general interest to both industrial and commercial gas men as well as the manufacturers present. An informative two-part paper on selling gas and gas equipment to the government was given by W. H. Loving, Washington Gas Light Co., and James R. Lee of the Washington office, Gas Appliance Manufacturers Association. Willard F. Rockwell, chairman of the board, Rockwell Manufacturing Co., Pittsburgh, made an inspiring address under the title of "What's Ahead for America."

Remarkable advances made by the gas industry since the last war were stressed in a talk by A.G.A. President D. A. Hulcy. He also predicted a continuation of progress for the gas industry and predicted that the industry will meet all its problems, including assurance of a firm gas supply to manufacturers.

Frank H. Adams, president, Surface Combustion Corp., Toledo, described "What's Ahead for Industrial Gas." He produced statistics on the accomplishments of industrial gas during the recent years and in the last two world wars. Mr. Adams remarked that the industry is in a strong competitive position to meet the requirements of the armament program in quality, capacity and labor efficiency. Major problem on the horizon, he noted, is—What are the regulatory bodies and the gas industry going to do about meeting the increasing demands for gas service?

Another speaker, George L. Anderson, Army Quartermaster Corps, told the assembled delegates how they can help to improve mass feeding. His suggestions included several on how to improve heavy duty cooking equipment. He urged his listeners not to be bound by past traditions but to concentrate ever more attention and effort on the development to meet consumer demands.

A.G.A.'s utilization engineer, C. George Segeler, (Continued on page 52)



Operating men in Memphis: (Left to right) V. F. Bittner, chairman, A. G. A. Distribution Committee and presiding officer at Distribution, Motor Vehicles and Corrosion Conference; I. S. Webster, Public Service Electric & Gas Co., general session speaker; W. A. Dunkley, Memphis Light Gas & Water Division, and R. Van Vliet, chairman, A. G. A. Operating Section

Master plan needed for new loads

Necessity for sound planning to keep pace with the phenomenal growth of the gas industry held the attention of 780 distribution men from the United States and Canada last month. Meeting in Memphis, Tenn., April 16-18, the delegates held one of the most information-packed Distribution, Motor Vehicles and Corrosion Conferences ever sponsored by American Gas Association.

Four general sessions covered a variety of subjects, from corrosion control and industrial relations to safety in action and new developments in network calculators. Conferences of the Motor Vehicles Committee delved into employee job training, two-way radio problems, and use of LP-gas as a motor fuel. Corrosion men discussed corrosion control in the early stages of construction, and numerous other subjects. In addition to corrosion and motor vehicles, special luncheon conferences covered construction and maintenance, distribution design and development, meters and metering, and consumers' premises activities.

Presiding at the opening general session, V. F. Bittner, The Peoples Gas Light & Coke Co., chairman, Distribution Committee, reviewed the part that

favorable financial conditions have played in the gas industry's rapid growth. He advised his audience to adopt a realistic master plan to keep pace with ever increasing new loads.

Thomas H. Allen, president, Memphis Light, Gas & Water Division, the host company, welcomed the delegates to Memphis. Representatives of his company helped to plan many details of the conference. They also conducted 400 of the conferees on a tour of the Memphis dispatcher's office and remote control set up. Many of the gas men also visited two odorizers at the city gates and the service training laboratory at the gas plant.

"The Shape of Things to Come" was outlined in a general sessions talk by H. Carl Wolf, managing director of A. G. A. Mr. Wolf reminded the group that American Gas Association has opened a Washington office to assist its members with their defense problems. He emphasized the importance of the current PAR Plan field investigation of various gas range automatic ignition systems.

"The gas industry is shaped by brains and perspiration," Mr. Wolf declared. "We should carefully select and train

our men, laying particular emphasis on safety fundamentals."

Why did Transcontinental Gas Pipe Line Co., Houston, incorporate a corrosion control program during the early construction phases of its gas transmission system? Clyde McGraw, vice-president of operations, presented some clear-cut answers to this questions.

He showed that an efficient corrosion control program will help immeasurably to keep a pipeline in serviceable condition for a long period. Mr. McGraw estimated that there are over 500,000 miles of underground pipe in the United States with a value approaching \$10 billion. With a depreciation rate of three percent a year the annual replacement cost would be \$300 million. He emphasized that corrosion is undoubtedly the principal cause of this great economic loss.

In closing, Mr. McGraw pointed out that the economics of need for corrosion prevention are comparatively simple. Pipe of 5/16-inch wall thickness operated at the conventional safety factor, 72 percent of yield strength, would be operating dangerously close to 100 percent of the yield point if 1/16-inch of

the original material were removed by corrosion. No one need be reminded how quickly 1/16-inch of steel pipe wall can be lost if not adequately protected, he added.

Mr. Bittner then introduced a panel of experts who held an off-the-record discussion of industrial relations. J. J. Novy, assistant to vice-president, The Peoples Gas Light & Coke Co., Chicago, was moderator. Panel members included: J. E. Heyke, Jr., vice-president, The Brooklyn Union Gas Co.; Alfred Hirsh, vice-president, Laclede Gas Co., St. Louis, Mo.; H. B. Noyes, vice-president, Washington Gas Light Co., Washington, D. C.; George B. Johnson, manager of customer service, Minneapolis Gas Co., Minneapolis, Minn., substituted for L. J. Eck, vice-president of that company, who was unable to attend.

The Tuesday morning session was opened by I. S. Webster, superintendent of distribution, North Hudson District, Public Service Electric and Gas Co., Newark, New Jersey. Mr. Webster's paper covered the equipment and procedure for service renewal with soft copper tube. He stressed the advantages of using pneumatic tools and presented slides to show their effectiveness. The speaker estimated that it cost \$20 more per service with hand-operated equipment.

The tubing used is Type K Soft Rolled Water Tube. The old service is thoroughly cleaned with a Rito Tube Cleaner. Then the copper tube is pulled through the old service with an air hoist with a rated load of 600 pounds at 50 feet per minute and a stalling load of 1,800 pounds. Fittings used at the main were brass tee and street ell with compression fitting. Mr. Webster remarked that his company's experience in the past has shown that temporary emergency repairs averaged \$75 each, while the new method of renewing averaged about \$60 per unit for permanent repair.

Next event on the program was a three-way discussion of service training kits. John MacLarty, supervisor of training, Rochester Gas & Electric Corp., Rochester, N. Y., stressed the importance of training servicemen. He brought out the fact that there had been no activity on this subject as far back as the last ten years, except for some A. G. A. booklets. Mr. MacLarty suggested that a committee be formed to support the production of training aids and that this group also be available for consultation.

George B. Johnson, manager, cus-

Safety trio: (L. to r.) G. A. S. Cooper, chairman, Subcommittee on Safe Practices in Distribution; W. H. Adams, chairman, Accident Prevention; W. F. Brown, Consolidated Edison Co.



One of the visiting gas men from Canada at the Distribution Conference was Keith J. Burnett, United Gas & Fuel Co. of Hamilton (Ont.), Ltd.

tomter service, Minneapolis Gas Co., and W. C. Peters, assistant gas distribution engineer, Northern States Power Co., St. Paul, Minn., put on a demonstration while holding a mock service training school class. Their skit was very effective in showing the upper and lower explosive limits of natural gas. Mr. Peters stressed the importance of saving human lives and the need to give more support to servicemen.

Mr. Bittner invited everyone to be present at the safety session to be held on Wednesday. He then introduced A. B. Lauderbaugh, chief gas engineer, The Manufacturers Light and Heat Co., Pittsburgh, whose paper covered "Principles of Orifice Metering."

History of metering

Mr. Lauderbaugh brought out the fact that published papers and bulletins show the "how" of orifice metering but do not mention the "why." He added that the principle of orifice meters stems from the Egyptians who used it in their water systems. From this point, he brought the use of orifice meters up to date through improvements made by Galileo and Daniel Bernoulli who originated the theorem of

orifice metering.

Mr. Lauderbaugh presented slides showing how the present formula for computing gas volumes in measurement by orifice meters was derived. He closed with the advice that if you do not overlook any detail in construction and operation of an orifice meter installation you need have no doubt of its accuracy.

J. P. Clennon and J. K. Dawson, The Peoples Gas Light & Coke Co., Chicago, presented an interesting paper on the solution of gas distribution problems by electric network calculators. Mr. Clennon presented the paper and slides showing comparisons between electric and gas flow formulas on which the design and operation of the machine is based. He presented a sample problem in a distribution system and showed how the flow was calculated. He estimated that this problem could be solved in two hours by the electric network calculator but that it would take about eight hours using present methods.

Wednesday morning's session was opened by John "Doc" White, The Peoples Gas Light & Coke Co., who presented a paper on "Effect of New House Heating Load on Customers Service." Mr. White outlined his own company's



(Left to right) A. H. Cramer, chairman, Corrosion Committee; J. A. Whelpley, vice-chairman, Distribution Committee; H. Bruce Andersen, Section vice-chairman; A. C. Cherry, Cincinnati



A few of the 780 operating men from the U. S. and Canada registering for the Distribution, Motor Vehicles and Corrosion Conference

Lewis Heyman (left), Memphis; M. C. Miller (center), chairman, Subcommittee on Instrumentation; H. G. Howell, chairman, Subcommittee on Distribution Design & Development

policy in regard to new house heating load and said that engineering was predominant and salesmanship ran second. Mr. White's paper is printed in this issue of the MONTHLY, beginning on page 4.

J. A. Whelpley, The Cincinnati Gas & Electric Co., vice-chairman, A. G. A. Distribution Committee, then introduced E. G. Watkins, division engineer, Consolidated Edison Co. of New York, Inc. Discussing anchorage of gas mains, Mr. Watkins said the main factor involved in applying anchorage in the company's system is the raising of pressures. He reported trouble with joints pulling apart and losing caps on dead end mains. He also noted that stresses, of course, are important and should be considered. Mr. Watkins then showed slides of some gas joint anchorage and outlined his company's experiences and practices.

J. V. Turpish, assistant superintendent of distribution, New York & Richmond Gas Co., Staten Island, N. Y., presented a paper on changeover practices. He was assisted in preparing this paper by K. J. Burnett, general superintendent, United Gas & Fuel Co., Hamilton, Ontario, and D. L. Drake, superintendent of fitting department, Consolidated Gas Electric Light & Power Co. of Baltimore.

Mr. Turpish stressed the importance of training new men brought in by the contractor and also company men employed in the changeover. It is important to keep your same phone number and not add any new numbers to confuse your customers and cause undue delays. He also stressed the importance of making an inspection of commercial and industrial accounts to determine what can be properly converted and what must be replaced. Advertising is a major factor in the success of a changeover program, Mr. Turpish said.

Conversion broadens

The speaker added that it is imperative to drill new ports in burners before changing over to natural gas. Otherwise, he noted, you will have to go back time and time again to make adjustments without complete success.

"Participation by the individual in a conversion," he concluded, "broadens his outlook on, and his understanding of the industry."

Next event was a panel discussion on the protection of distribution systems from enemy action. Heading this panel was H. W. Nicholson, general superin-

tendent of distribution, gas department, Public Service Electric & Gas Co., Newark, N. J. Panel members included: Charles G. Simpson, assistant engineer of works, The Philadelphia Gas Works Co.; J. H. Collins, general superintendent, gas department, New Orleans Public Service Inc., and E. G. Campbell, general superintendent of distribution, The Peoples Gas Light & Coke Company. This discussion was based on a questionnaire covering problems such as the need for badges in a large plant, passes for admittance to company properties, bulletins and magazines to keep employees alerted and informed, segregation of distribution system by installing more valves, need for full-time or part-time guards, etc. Panel members agreed that it is better for the customer not to turn off the gas meter in an air raid alert (see A. G. A. public statement for home gas users. . . , A. G. A. MONTHLY, March 1951, p. 4). Questionnaires were given out and delegates asked to send answers or information to the panel.

The Wednesday afternoon safety session drew a packed house. Mr. Bittner turned the meeting over to E. S. Beaumont, The Peoples Gas Light & Coke Co., who remarked that it is the people

on the firing line who are responsible for putting over a safety program.

W. H. Adams, chairman, A. G. A. Accident Prevention Committee, and safety director, The Manufacturers Light & Heat Co., Pittsburgh, talked on "Accident Prevention is your Baby." He said that safety men are the "wet nurses" for the operating men and that the "baby" needs nourishment in the form of management attention. He also brought out that in 1950 there was a decrease of 35 percent in fatalities and 12 percent in accidents from 1949. The success of a safety program requires everlasting efforts, Mr. Adams said. He concluded that the Accident Prevention Committee should and can be called on for help.

Don M. Redfoot, safety director, Service Pipeline Co., Tulsa, Okla., spoke on safety as a lifetime job from the supervisor's viewpoint. Mr. Redfoot said that a personal survey among supervisors came up with the answer that "Safety is nothing but good business." This was based on the fact that safety: (1) is a humane thing; (2) saves money; (3) exerts a helpful impact on communities and public relations; (4) is a common ground to build good employee relations.

Mr. Redfoot analyzed the above points. He said that for supervisors to be successful in safety work they need inspiration, leadership, training, planning, communication between workers and responsibility. A tremendous job can be accomplished using the theme that safety is good business, he added.

The Accident Prevention Committee presented a hard-hitting skit on good and bad foreman attitude toward safety.

Next speaker was George MacDonald, senior engineer, public utility section, National Safety Council, Chicago. Mr. MacDonald mentioned these benefits derived from a good safety program: reduced cost, increased production and efficiency, improved employee, human and community relationships. He also brought out the important fact that insurance rates are definitely affected by accident prevention. Mr. MacDonald asked the aid of the gas industry and stated the Safety Council is ready at all times to help. His talk was followed by a fine film, "Safe as You Think."

Door prizes were distributed and the conference was adjourned by Mr. Bittner.

(Following are individual news reports on the various luncheon conferences in Memphis. Other reports will appear as they are received.)

• Working groups at Memphis luncheon conferences delin to g

MOTOR VEHICLES

(Left to right) F. E. Selim, Bartlesville, Okla.; P. W. Rogers, chairman; S. G. Page, Pittsburgh; W. E. Albright, vice-chairman, and I. G. Anderson, Chicago



CONSUMERS' PREMISES

Speakers' table: Ben Gault (left), Youngwood, Pa.; Ray G. Juergens, Cleveland; J. G. White, Chicago; G. B. Johnson, subcommittee vice-chairman; E. F. Hart, Boston



CONSTRUCTION & MAINTENANCE

E. H. Wachs (left), Chicago; W. J. Townner, Brooklyn; L. M. Harris, chairman of the subcommittee; F. H. Bunnell, group vice-chairman, and R. J. Plank, Pittsburgh



Committee activities at Memphis conferences

THE CORROSION COMMITTEE sponsored a paper at the general session on Monday, April 16, four papers at the Corrosion Committee session on Tuesday, April 17, and sponsored two luncheon conferences.

The Monday luncheon conference was de-

voted to a round-table discussion of corrosion problems encountered by gas distribution companies. Discussion was coordinated by A. H. Cramer, Michigan-Wisconsin Pipe Line Co., chairman, Corrosion Committee. He was assisted by a panel of discussion leaders including: N. P. Peifer, The Manufacturers Light and Heat Co.; M. C. Miller, Ebasco Services, Inc.; R. J. Kuhn, consulting engineer; W. J. Schreiner, The Cincinnati Gas and Electric



METERS & METERING

Luncheon head table: (L. to r.) R. F. Diehl, St. Louis; G. E. Griffin, group chairman; Gilbert Estill, vice-chairman; W. J. Menet, Chicago, and J. Webb, New York



CORROSION

(Left to right), R. J. Kuhn, New Orleans; O. C. Roddey, Shreveport, La.; N. P. Peifer, Pittsburgh; A. D. Simpson, Jr., vice-chairman; A. H. Cramer, chairman; M. C. Miller, New York; C. L. Woody, Houston, and W. J. Schreiner, New York



DISTRIBUTION DESIGN & DEVELOPMENT

C. C. Barr (left), Baltimore; W. F. Goffe, Jr., Pittsburgh; H. G. Howell, chairman of the subcommittee; George D. Mock, Washington, D. C.; Karl E. Schmidt, vice-chairman

Co.; A. D. Simpson Jr., United Gas Corp.; O. C. Roddey, Interstate Natural Gas Co., and C. L. Woody, United Gas Corporation.

Questions and problems discussed included the following:

- (1) Soil conditions which require that pipe be coated.
- (2) Relation between corrosion severity and soil resistivity.
- (3) Expected life of pipe coatings.

(4) Maximum soil resistivity in which magnesium is effective.

(5) Effect of negative pipe potentials on coatings.

(6) Expected life of graphite and carbon anodes.

(7) Corrosion mitigation on steel services and cast iron mains.

(8) Coating of mains and services.

(9) AC breakdown of cathodic protection rectifier.

- (10) Cathodic protection interference.
- (11) Effect of cinder fill on cathodic protection of bare pipe.
- (12) Polyvinyl tapes for coating joints.
- (13) Materials for field repair of coatings.
- (14) Percentage of new pipes under cathodic protection.
- (15) Coating and cathodic protection versus bare pipe.
- (16) Use of magnesium at interference point versus bonding.
- (17) Grounding of metering stations for lightning protection.
- (18) Economics of cathodic protection of small pipe.
- (19) Bacterial corrosion.
- (20) Criteria for cathodic protection of coated and bare pipes.
- (21) Reconditioning of pipe lines.

Approximately 100 gas men attended the luncheon conference.

On Tuesday morning, a special corrosion session was held with four major papers on the program. "Long-Time Performance of Pipeline Coatings," was discussed by C. W. Shupp and Guy Corfield, Southern California Gas Co., Los Angeles. The paper included tabulated data of coating resistances on many lines installed five to 22 years in various types of soils. An analysis of leaks in coated and wrapped pipes showed that many of these could be traced to the human element—improper machine application, damage during transport, storage and installation, improper field coating, and damage caused by construction and maintenance operations of other utilities. Other failures resulted from environmental causes, such as soil stress, aging, rock penetration, root penetration, bond between pipe and coating, and moisture absorption.

Failures due to the human element have been reduced by inspections and tests for quality control of materials and finished coating, and training of personnel in handling, storing and installing pipe. Reduction of failures caused by the soil environment has been obtained by developing and improving specifications for pipe coating materials.

A second paper, "Practical Experiences in Corrosion of Hot Water Tanks," was delivered by R. L. Featherly, Dow Chemical Co., Midland, Michigan. According to Mr. Featherly, galvanized coatings which have given excellent protection against atmospheric corrosion and in cold water service may lose their effectiveness in hot water service. Magnesium anodes are therefore installed to prevent corrosion and "red water" conditions in existing hot water tanks.

Laboratory and field tests show that magnesium rod should provide adequate corrosion protection in 90-95 percent of the installations in the United States. In some soft poorly mineralized waters such as in New England, effective protection may not be obtained with a single magnesium rod.

The paper discusses over-protection and gassing, objectionable odors, rumbling noises, increase in water hardness, and indicates what corrective steps can be taken in each of these cases. Among these is a resistor type magnesium anode now available on the market which will give a reduced current where desired. Curves are presented showing the expected life

(Continued on page 41)



Caught by the camera during a lighter moment at the Eastern Natural Gas Regional Sales Conference were: (l. to r.) D. A. Hulcy, president of Lone Star Gas Co., and of American Gas Association; L. F. Worth, sales manager, dryer division, Bendix Home Appliances; Conference Chairman George L. Scofield, Republic Light, Heat & Power Co., and H. R. Zeamer, The Philadelphia Gas Works Company

Conference closed with panel session conducted by Irving K. Peck, vice-president, The Manufacturers Light and Heat Company. Participants were: H. R. Zeamer, Philadelphia; L. F. Worth, South Bend; W. L. Hayes, Minneapolis; Jessie McQueen, A. G. A.; Lance Lindquist, Pittsburgh; H. V. Potter, A. G. A., and H. Leigh Whitelaw, G.A.M.A.



Wanted—an aggressive approach!

Eastern Natural

You might call it "Operation Initiative" as President D. A. Hulcy of American Gas Association did. Or you might call it the "aggressive approach."

Mr. Hulcy and other speakers at the Association's Eastern Natural Regional Gas Sales Conference called it by a number of different names. Meeting in Pittsburgh, March 26 and 27, they showed that the time is at hand to hit back hard at the inroads being made by electric competition. Industry leaders addressing the conference issued stern warnings against any slackening of sales effort because of restrictions due to the foreign situation.

Noting that mobilization, the effects of Regulation W and higher taxes will make selling more difficult, Mr. Hulcy called for increased efforts to sell available gas appliances.

The Philadelphia Gas Works Company's intensive program of aid to gas appliance dealers was outlined by H. R. Zeamer. Pointing out that the retailer

is not a fuel man, he declared that the job of combatting electrical competition rests with the gas utility. He urged co-operation with appliance manufacturers and their distributors for the same reason.

L. F. Worth, manager of clothes dryer sales, Bendix Home Appliances, declared that dryer sales volume had increased eleven fold from 1946 to 1950. However, in 1950, electric dryer sales still outnumbered gas by four-to-one.

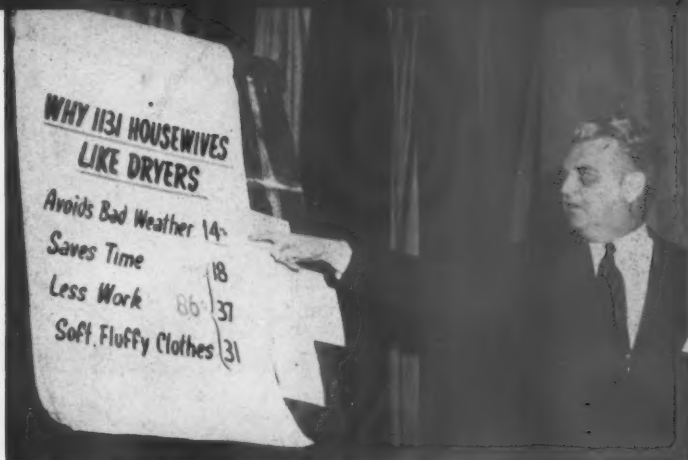
The afternoon session on the first day was devoted to a dramatic preview of the Association's 1951 promotion schedule. This was followed by a gas vs. electric cooking demonstration conducted by three Pittsburgh home service directors. (See page 47.)

Responsibility for allowing gas appliance manufacturers to turn to electric products was placed squarely on the gas industry's shoulders by W. L. Hayes, general sales manager, Montana-Dakota Utilities Co., Minneapolis. During the opening speech on the second day, Mr. Hayes made a ringing appeal for a

L. F. Worth, sales manager, dryer division, Bendix Home Appliances, Inc., reported an eleven-fold increase in dryer sales between 1946 and 1950, but pointed out that gas dryers represent only one-fourth of those sold



A graphic demonstration of the superiority of gas as a cooking fuel was enacted by Flora Dowler, Ruth Severson and Kathryn Barnes, home service directors of The Manufacturers Light and Heat Co., The Peoples Natural Gas Co., and Equitable Gas Co., respectively. The skit was designed by the last company



Seen together between conference sessions were: Albert P. McNamee, McCall's Magazine; W. L. Hayes, general sales manager, Montana-Dakota Utilities Co.; Lee Corn, supervisor, domestic gas sales, The East Ohio Gas Co.; Lance Lindquist, Ketchum, MacLeod and Grove

greater sales effort. The 15 million obsolete gas appliances in American homes are the greatest prospect list for electrical competition, he declared. Gas needs the "old-fashioned, door-bell-ringing, house-to-house-canvassing type of salesman" to meet this competition, he added.

Lance Lindquist, radio and TV director, Ketchum, McLeod and Grove, Inc., discussed various ways that the gas industry can use local television shows. Albert P. McNamee, *McCall's* Magazine, introduced the publication's new Kitchen Planning Contest.

The two-day session closed with a panel session conducted by Irving K. Peck, vice-president, The Manufacturers Light & Heat Co., Pittsburgh. In addition to conference speakers, Jessie McQueen, A.G.A. home service counselor, and H. Leigh Whitelaw, managing director of GAMA, sat in on the panel.

Attendance of more than 250 set a new record for conference meetings in Pittsburgh. Following is a brief description of the dramatic gas vs. electric cooking demonstration.

Mid-West Sales Conference

More than 500 sales executives and representatives of gas utility and gas appliance manufacturing companies attended the Association's twenty-fifth annual conference of the Mid-West Regional Gas Sales Council at the Edgewater Beach Hotel, Chicago, April 9-11. Speakers from within and outside the industry addressed the delegates on subjects ranging from sales problems to human and national relations.

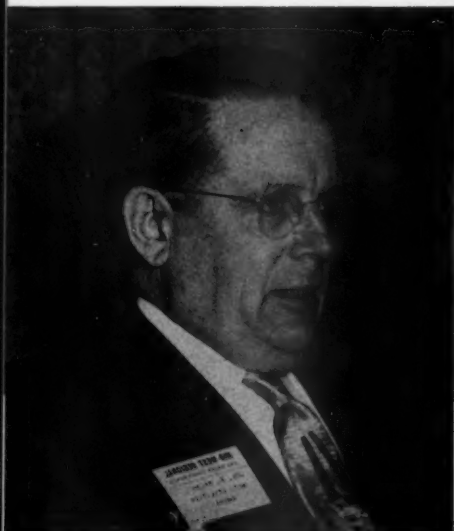
J. E. Walsh, director of sales, Metropolitan Utilities District, Omaha, Neb., was chairman of the meeting. D. A. Hulcy, president, Lone Star Gas Co., Dallas, and president of A. G. A., pointed out that many gas companies are failing to do a good job at selling. If you don't sell, there is no reason for the industry, he declared.

Although the gas industry is in an excellent position today, it is in danger of losing its position of leadership to our competitors by default, Mr. Hulcy stated. The time has come to take the initiative,

he added. His recommendations called for more and better sales power; a better pattern in distribution of appliances and equipment; better appliance installation and service practices; improved gas appliances and equipment; more advertising, promotion and publicity at the local level; a more effective attack on the new home market, and greater part in industry promotion and advertising campaigns. For the gas industry, the future watchword is "Operation Initiative," the A. G. A. president declared.

Aware that there may be some reduction in gas appliance production but that taxes, credit regulations and other factors may tend to reduce the demands of consumers, the A. G. A. Promotion Bureau has initiated an aggressive program of sales, advertising and promotional activities for 1951. This program was outlined by H. Vinton Potter, C. E. Hall, and Frank W. Williams of the A. G. A. staff.

Mr. Williams reviewed the thinking that has led to the long-range planning now being carried out. He explained



Joseph E. Walsh, director of sales, Metropolitan Utilities District, was chairman of the Mid-West Regional Gas Sales Conference, April 9 to 11



Walter Kurdelski (left), Michigan Consolidated Gas Co., explained the advantages of promoting sales of gas clothes dryers. E. S. Pettyjohn, director, IGT, outlined the researches to insure year around continuity of energy supply



A. E. Lee (left), Servel, Inc., said that good salesmanship could give gas refrigerators a more favorable market position. Pierre Vinet, Geo. D. Roper Corp., urged more aggressive selling to protect the vital gas cooking load



how the Association plans and creates, campaigns far enough in advance so they can be used by gas companies to form a strong, coordinated drive behind gas appliances to be featured during 1951. Mr. Potter and Mr. Hall brought each of the campaigns to life in amusing demonstrations portraying the spirit behind the promotional event.

A. E. Hatley, Central Indiana Gas Co., and assistant chairman of the Mid-West Regional Sales Conference, presided at the afternoon meeting. His first speaker, Marshall W. Batchelder, Caloric Stove Corp., offered a single act drama to refute many of the claims regarding the cleanliness, speed and economy of competitive fuels in home cooking.

A. E. Lee, Servel, Inc., told delegates of the serious situation that exists as regards gas refrigeration. Gas ranges and gas water heaters dominated the market, he pointed out. But the opposite is true in the refrigeration market where the electric refrigerator has heavy domination. Gas refrigeration sales problems require good thinking today, he added, but there is no problem in the industry that good salesmanship could not help solve.

Albert P. McNamee, *McCall's Magazine*, predicted that there would be no dearth of appliances this year. Already the industry, in the first quarter, has produced the greatest number of appliances in its history. There will be plenty of merchandise. This will permit the housewife to exercise selection, and more and better selling will be required to push sales of appliances against such deterrents as increased costs of living, restrictions of credit terms, limits on building and construction and other obstacles.

Paul Harvey, radio commentator and lecturer from Chicago, entertained his audience with some of his own views on national and international subjects.

Dryer advantages told

Floyd M. Rosenkrans, The Gas Service Co., Kansas City, presided at the Tuesday meeting in place of George D. Wells who was unable to attend the conference. His initial speaker, Walter H. Kurdelski, Michigan Consolidated Gas Co., Grand Rapids, discussed the many advantages accruing to the gas utility company from promoting the sale of gas dryers. He also pointed out that the gas

utility company could lose this profitable new market by default, through lack of sales promotion at the local level. He said that in 1950 a total of 295,000 automatic laundry dryers were sold, and that of this number about 235,000 units or 80 percent were electric. Despite this fact, he said, the gas laundry dryer has definite advantages as regards initial cost, installation and operating costs, as well as accomplishment.

Pierre Vinet, Geo. D. Roper Range Corp., declared that the gas cooking load is the life line of the gas industry and must be protected. Gas range sales are slowing down, he added, because of aggressiveness of electric range salesmen and the complacency of gas range salesmen. The ratio of gas range sales to electric range sales has dropped to 1.6 to 1, he said.

The need for more and better salesmanship was stressed strongly by W. L. Hayes, Montana-Dakota Utilities Company. Mr. Hayes declared that the industry should profit by the mistakes made in World War II when sales forces were allowed to shrink. He showed the alarming trend toward electric ranges, particularly in (Continued on page 47)

A.G.A. broadens standardization group

In order to assure prompt decisions on questions concerned with the present national emergency and attendant problems of material restrictions, the Association's Approval Requirements Committee has enlarged the scope of its executive committee to handle such matters. This step will greatly expedite disposition of questions of this sort which otherwise would require polling the entire Approval Requirements Committee membership by letter ballot.

The executive committee has been enlarged from three to seven members in order to provide fuller representation. In addition to Chairman C. H. Waring, Lyle C. Harvey and George S. Jones, Jr., the committee now has been expanded to include Frank H. Adams, Edwin L. Hall, L. R. Mendelson and Howard B. Noyes.

Four subcommittees of the Approval Requirements Committee met at the Laboratories during April. The groups

considered revisions to gas appliance standards that either have been distributed to the industry for criticism or that are proposed for future adoption.

The subcommittee for automatic main gas control valves met on April 18, the subcommittee for refrigerators on April 19, the subcommittee for gas valves on the April 25 and the subcommittee for pressure regulators on April 26 and 27. Subcommittees for ranges and clothes dryers are expected to meet in the near future.

Framework completed for Cleveland addition

Steel framework has been completed for the new two-story addition to the Cleveland Laboratories and brickwork is scheduled to start during April. The new addition eventually will provide an additional 20,000 square feet of floor space over present plant facilities. Thus it will relieve the crowded condition that has prevailed for a number of years and

will provide better facilities for manufacturers.

The addition is being built at a cost of approximately \$238,000, but only the first floor will be utilized at the present time. The second floor will be completed gradually as needed; construction costs are much less for completing the second story shell immediately rather than adding

it at a later date. The first floor will contain a new entrance and reception rooms for visitors and manufacturers. Storage and the description department also will be located there, as well as telephone facilities. A large covered loading dock will accommodate two trucks at the same time. At a later date a number of manufacturers' rooms also will be located on the first floor.

Laboratories receive ECA technical award

A certificate of cooperation for technical assistance rendered to representatives of Marshall Plan countries was awarded to A. G. A. Laboratories in April by the Economic Cooperation Administration. The award marked the third anniversary of the Marshall Plan under which assistance to technical missions has been a powerful factor in the strengthening of Western Europe, according to William C. Foster, Administrator of the Eco-

nomic Cooperation Administration.

The Laboratories have provided a number of technical assistance missions with information concerning various types of gas industry operations and given them every help possible. Among those visiting the Laboratories have been two groups from Germany and a number of others from Scandinavian countries.

Through help given by the United States, most of the Marshall Plan coun-

tries are now producing considerably more than they did in prewar years, Mr. Foster pointed out. At the same time, he added, those countries must undertake and require a better and more efficient utilization of existing plant and equipment. Information needed best can be obtained in the United States and is being provided by firms cooperating with the program.

Schlieren optical system to photograph flames

An optical system for photographing flames and flow patterns useful in the study of combustion and associated phenomena is being constructed by American Gas Association Laboratories for use in research work. The instrument will be displayed at the Domestic Gas Technical Research Conference in Cleveland on May 24 and 25.

Initially the instrument will employ the principles of Schlieren photography. A high intensity pinpoint light source is transformed to parallel rays which are refracted in passing through the flow

stream to be photographed. These rays then are converged on a photographic plate, passing across a knife edge which intercepts all but a fraction of the unrefracted rays, increasing the definition and contrast of the picture. The instrument also can be converted to an interferometer which produces an interference pattern on the plate. This picture of black and white lines is distorted by disturbances in the flow stream under observation.

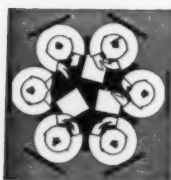
In order to stabilize the instrument and prevent vibration it is hung by

springs from two steel towers approximately 12 feet apart. The optical system is contained in two sections of 8-inch pipe spaced approximately five feet apart and hung horizontally from the towers. An optical bench between them supports the photographic equipment.

Criticism

● Mae West, when told by a chauffeur making a repair that he was "doing his best," replied, "Then try doing your worst. Your best is terrible."

—Baltimore Sun



Industrial relations round-table

Prepared by
A. G. A. Personnel Committee,

Edited by Bernard H. Kinzer

● **Employment prospects for the older worker** are getting brighter, according to a new bulletin published by University of Illinois Institute of Labor and Industrial Relations. Emergency manpower requirements will, of course, bring increased employment opportunities in the period immediately ahead. Of greater long-range significance is the emergence of a new principle of personnel policy: Individual ability at any age is more important in relating men and jobs than exact age in years. This principle is steadily gaining recognition in the light of older workers' favorable records on the job in quality of work, injury experience, and absenteeism and turnover rates.

Following is a summary of what is being done and proposed regarding workers over 45:

Study of job requirements to see what specific jobs are suited to individuals of differing capacities.

Development and use of proficiency tests to determine the employability of a worker by more discriminating criteria than age alone.

Retraining in cases where jobs have been eliminated by the introduction of machines and when older workers can no longer meet the demands of their jobs.

Preparation for gainful work after retirement. Some companies have set up in-plant educational programs for older workers where gainful hobbies may be learned that will be useful in "careers after 65."

Many employers are understandably reluctant to hire older workers because of added expense and complications that would arise under the company pension plan. It has been suggested, however, that this problem can be solved by providing vesting rights in pension plans. An older worker with a vested interest in a pension fund has one less handicap in seeking another and perhaps better job. The new employer is also relieved of the problem of the worker's reaching retirement age without pension rights.

Another suggestion, already tested successfully in a number of companies, is that management and unions work out flexible wage standards that enable older workers to take less productive jobs at lower hourly rates. Some unions have agreed to shifts of older workers to easier jobs at lower earnings in exchange for continued employment. For workers of retirement age, voluntary retirement might be adopted with the employer providing work geared to lessened productive capacity with a lower wage standard for those who stay. A problem here is the education of older workers in accepting lower-rated jobs than those they had when they were younger.

● **Protect executive health**—In this era of atomic tensions, no one suffers more than the

industrial executive. A recent Conference Board report says that of 500 industry officers examined by the Life Extension Examiners of New York, 62 percent were found to have conditions requiring a doctor's attention.

Associated Industries recently surveyed 25 typical employers to find out what they are doing to check on executive health. Here are some of the findings:

Company A: Annual physical examination for executives, who may go to their own or the company doctor. The bill is submitted to the company. There is a maximum of \$50, but if over, the company may pay. The executive does not have to submit the doctor's report. The company goes on the theory that the individual will voluntarily tell if anything is radically wrong with him. The policy was initiated in 1947.

Company B: Physical examination is annual. The executive goes to his own or the company doctor. The bill is paid by the employer. The doctor fills out a form supplied by the company and mails it to the president, who regards it as confidential. If anything is radically wrong with the individual, the company decides what to do.

Company C: Annual physical examination for all employees. The company doctor makes examinations by appointment at the plant, which has X-ray and all other necessary equipment. The report is confidential between the doctor and employee unless something is radically wrong, in which case the doctor informs management. The company assumes all costs.

● **Manpower planning**—See "Manpower Planning for the Emergency" Survey No. 1, issued in March 1951, by Bureau of National Affairs. It contains a great deal of worthwhile information on the current manpower situation throughout the country.

● **Employment opportunities for engineering graduates** have improved greatly since early 1950, reports Bureau of Labor Statistics. The mobilization program has increased the demand for engineers so much that employers are now seeking additional personnel, after absorbing the engineering schools' record 1950 graduating class of 50,000.

● **Curbs**—Strict limitations on "help wanted" advertisements are in the works. Bureau of Employment Security has obtained a promise from American Newspaper Publishers Association to tone down recruiting advertisements by "non-essential" employers. Under the arrangement, newspapers will discourage makers of civilian goods from playing up such inducements as high pay, pensions, and similar benefits.

● **Military leave policies**—The National Industrial Conference Board has recently published the results of a survey on "Company Military Leave Policies." Three-fourths of the 212 companies surveyed have revised or changed their policies since June, 1950. Over 90 percent of the companies reported that their

present policies are as liberal as they were in 1945 and often more liberal.

Pension credits are granted for time in military service by nine-tenths of the companies. All companies reported that hospitalization insurance for the employee is cancelled when he leaves for military service. Almost all of the companies cancel group life insurance. A majority of the companies give the employee a military leave bonus to aid him in making the transition from civilian to military life.

● **Yours for the asking**—"Present Arms"—a neat booklet which tells employees being inducted into the services how to wind up their personal affairs. Information covered is chock-full of important reminders on power of attorney, safety deposit box, how to take care of dependents, etc. Inexpensive to put out too. Write for your copy: Walter F. Gries, superintendent, The Cleveland-Cliffs Iron Co., Ishpeming, Mich.

● **Scoop stuff**—Every worker is a potential reporter at Republic Steel (Cleveland, Ohio). Company offers \$2 for every usable item submitted to the house organ. Photos, recipes, stories, are solicited via the novel contest. Borden (New York City) using similar gimmick for bulletin-board items got 133 good stories. Borden gives \$5 for best story of the month and \$1 for every usable piece.

● **Advancement aid**—To make sure that its promotion-from-within policy is more than lip service, Monsanto Chemical Co. (Monsanto, Ill.) has this rule which is published in the employee handbook: "... it has been established as a strict company-wide policy that division managers will not go outside the company to fill positions paying \$300 a month or more except with the approval of the executive board of the company."

● **Pension drive revived**—Unions haven't forgotten pensions. United Auto Workers have set this goal for next year: Pensions of \$200 a month and right to transfer pension credits from one company to another.

● **Polio insurance**—Nearly 10,000 employees of The Columbia Gas System, Inc. have had polio insurance added to their group hospitalization and surgical plan. In a communication addressed to the employees and their families, Stuart M. Crocker, Columbia's president, announced that the protection had been added at no cost to them.

The plan provides benefits up to \$5,000 for any Columbia employee or the members of his family who might be stricken with infantile paralysis.

● **Directory of motion pictures and slide films**—A new directory of motion picture and slide films for industry executives has been prepared by Film Research Associates.

This guide (Staff Service Bulletin No. 15) can be purchased for \$1.50 by writing to Film Research Associates, 135 West 52 St., New York 19, New York.

Industry news

A.G.A. announces April '51 publications

LISTED BELOW are publications released by American Gas Association during April 1951 up to the time the MONTHLY went to press. Information in parentheses indicates audience for which each publication was designed.

Operating

- **Reference Book on Instruments** (for corrosion engineers). Prepared by Subcommittee on Instrumentation, A. G. A. Corrosion

Committee. Available from A. G. A. headquarters at \$1.50 a copy.

- **Motor Vehicle Operators Manual** (for men in charge of motor vehicle operations). Prepared by A. G. A. Motor Vehicles Committee. Available from A. G. A., \$2.00 a copy.

Home service

- **Home Service Organization and Promotion**. Available from A. G. A., 25 cents a copy.

Statistical

- **Gas Househeating Survey, 1951-1953** (gas heating equipment manufacturers and gas utilities). Prepared by A. G. A. Bureau of Statistics. Restricted distribution—one complimentary copy sent to each cooperating utility and to members of heating equipment section, GAMA.

- **Monthly Report of Gas Sales—February 1951**. Prepared by A. G. A. Bureau of Statistics; available free from A. G. A.

Research

- **Interim Research Report No. 1, Investigation of Orifice Meter Installation Requirements** (natural gas industry). Prepared by Joint A. G. A.-ASME Committee on Orifice Meters. Available from A. G. A. headquarters at \$1.00 a copy. PAR.

- **Advanced Studies in the Combustion of Industrial Gases, Part II** (gas company and manufacturer company delegates and special mailing lists). Prepared by A. G. A. Committee on Industrial and Commercial Gas Research. Available from A. G. A. headquarters at 25 cents a copy. PAR.

- **Gas-Air-Oxygen Combustion Studies** (gas company and manufacturer company delegates and special mailing lists). Prepared by A. G. A. Committee on Industrial and Commercial Gas Research. Available from A. G. A. headquarters at 50 cents a copy. PAR.

- **An Investigation of Surface Hardening of Steel by Induction Heating and by High-Speed, Direct-Gas Heating** (gas company and manufacturer company delegates and special mailing lists). Prepared by Committee on Industrial and Commercial Gas Research. Available from A. G. A. headquarters without charge. PAR.

- **Research Bulletin 63, Research in Fundamentals of Heat Transfer in Central Gas Space Heating Furnaces** (gas company and manufacturer company delegates and special mailing lists). Prepared by Committee on Domestic Gas Research. Available from A. G. A. Laboratories in Cleveland, Ohio, at \$2.00 a copy. PAR.

Broad agenda for research and utilization

a PAR activity

AN impressive array of technical talent will address American Gas Association's 1951 Domestic Research and Utilization Conference at the Hotel Statler in Cleveland, Ohio, May 24 and 25. Sessions are designed specifically for engineers and servicing, installation and general technical personnel of gas companies and gas appliance and equipment manufacturers. However, the two-day program also includes valuable information for sales and operating executives.

Edward J. Nelson, Rochester Gas & Electric Corp., is chairman of the program committee for the meeting, the only national conference in the gas industry devoted to all practical and technical phases of appliances and the use of gas in the home.

Technical and non-technical papers will be presented on research and utilization covering cooking, water heating, space heating, and air conditioning. Additional projects under the Association's expanded domestic research program that will be discussed include appliance venting and aeration, burners and combustion and automatic appliance ignition control.

A special feature will be extensive clinics and question-and-answer periods, dealing with research, utilization practices, servicing and changeover from the standpoint of utilization. These clinics will be conducted by leading manufactured and natural gas engineers and engineers from appliance and accessory companies. Among the subjects to be covered are new developments and practices in cooking, water heating and space heating.

Modern changes in building design and construction have necessitated new practices in utilization and installation. These problems as well as latest angles on servicing will be subjected to analyses, questions and explanations.

Two luncheons have been scheduled. One of these will feature the showing of a remarkable new set of colored flame pictures demonstrating how the flame changes with each gas change. One of the nation's leading public relations experts will address the second luncheon meeting, offering valuable suggestions on industrial relations problems.

The Association's Laboratories in Cleveland will welcome visitors on Wednesday, May 23, the day before the conference. Members of the staff will be at the A. G. A. Laboratories to confer with delegates on details of research projects, comparative service tests, instrumentation and/or related subjects.

The variety of technical talent signed up for the Cleveland conference is shown by the following advance list of speakers:

Edward J. Nelson, Rochester Gas & Electric Corp.; John H. Eiseeman, National Bureau of Standards, chairman, A. G. A. Subcommittee on Standards for Installation of Gas Piping and Gas Appliances in Buildings; George B. Johnson, Minneapolis Gas Co., Minneapolis, Minn.; John James, McDonnell & Miller, Inc., Chicago; Walter F. Friend, Ebasco Services.

Also R. D. McNeice, engineer of utilization, Public Service Electric & Gas Co., Newark, N. J.; Dr. William R. Hainsworth, vice-president in charge of engineering, Servel Inc., New York, N. Y.; Herbert Luoma, Alabama Gas Corp., Birmingham, Ala.; Theodore Smoot,



R. J. Rutherford



E. J. Nelson

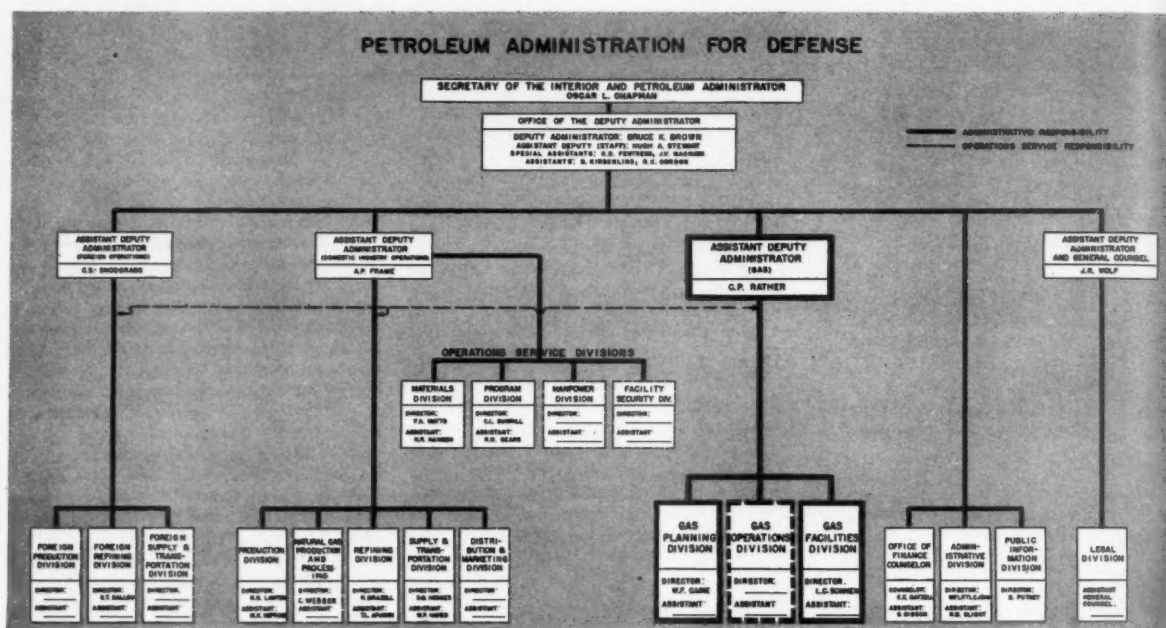


Dr. W. R. Hainsworth

Lennox Furnace Co., Marshalltown, Iowa; David Nicol, Institute of Gas Technology, Chicago; Charles Lamar, Harper-Wyman Co., Chicago; Earl Weber, A. G. A. Laboratories; Claude S. Hazel, The Philadelphia Gas Works Co.; Edgar A. Jahn, A. G. A.; John Pommerstein, administrative assistant to the chief engineer, Rockwell Manufacturing Co., Pittsburgh; George Mintner, Bendix Home Appliances, Inc., South Bend, Ind.; John W. Hebert, president, Valley Welding & Boiler Co., Bay City, Mich., chairman, GAMA Gas Incinerator Division.

Also the following: Ralph M. Besse, vice-president and general counsel, The Cleveland Electric Illuminating Co.; Eli Shapiro, chief engineer, Dearborn Stove Co., Dallas, Texas; Dr. Sam C. Hite, Purdue Research Foundation, Lafayette, Ind.; William D. Egan, The Peoples Gas Light & Coke Co., Chicago; Chester E. Blome, William-Wallace Co., Inc., Dallas; Walter B. Kirk, A. G. A. Laboratories; Robin S. Peoples, Battelle Memorial Institute, Columbus, Ohio; Joseph V. Turpish, New York and Richmond Gas Co., Stapleton, Staten Island, N. Y.; Edwin L. Hall, director, A. G. A. Laboratories, and C. George Segeler, A. G. A.

Gas industry experts aiding PAD operations



THREE prominent executives of the gas utility industry have received temporary leaves from their companies to serve the Government in advisory posts concerning gas matters. All three men are now serving as members of the executive and technical staff, Petroleum Administration for Defense.

Organization of the Petroleum Administration for Defense is shown in the above chart. Matters involving transmission and distribution of gas will be handled by the officers named on the darkened arm of the chart.

Charles P. Rather, assistant deputy administrator for gas, is currently serving on leave from his post as president, Southern Natural

Gas Co., Birmingham, Alabama. He will assist Deputy Administrator Bruce K. Brown. Mr. Brown in turn reports to the Secretary of Interior and Petroleum Administrator Oscar L. Chapman.

Walter E. Caine has obtained a leave from his job as vice-president & treasurer, Texas Eastern Transmission Co., Shreveport, Louisiana. He will assist Mr. Rather as director, Gas Planning Division. Louis C. Sonnen, on leave from the vice-presidency of purchasing, Tennessee Gas Transmission Co., Houston, Texas, has been appointed director of the Gas Facilities Division.

Offices of the gas industry advisers named

above all are located in the New Interior Building in Washington, D. C. Mr. Rather is located in Room 6649, Mr. Caine in Room 6641 and Mr. Sonnen in Room 6648.

Members of American Gas Association are advised to contact the new Washington office of A. G. A. regarding their particular mobilization problems. George H. Smith, assistant managing director of the Association, is in charge of the new office at 603 Albee Building, 1428 G St., NW, Washington, D. C. (METropolitan 1540).

Mr. Smith is continuing as director of the A. G. A. Natural Gas Department and will operate from both New York and Washington.

Evansville marks gas refrigerator anniversary

THE "refrigerator capital of the world" went all-out on April 5 to celebrate the twenty-fifth anniversary of its principal product, the gas refrigerator manufactured by Servel, Inc.

Special editions of the Evansville newspapers were published with congratulatory messages from Servel's industrial neighbors. Other refrigerator manufacturers in Evansville, contributing to the city's new-chosen

title, are Coldspot and International Harvester. Total employment of the three firms is approximately 15,000.

More than 30 downtown merchants continued Servel silver anniversary displays in their stores all week. In-plant celebrations were carried on during the day by Servel employees.

D. A. Hulcy, president, American Gas As-

sociation, and president, Lone Star Gas Co., Dallas, Texas, was the principal speaker at a celebration banquet arranged by the Evansville Chamber of Commerce. Other speakers included Earl Heseman, president of the Chamber of Commerce; Edward F. Diekmann, mayor of Evansville; Louis Ruthenburg, chairman of the board, Servel, Inc., and W. Paul Jones, president of Servel.

New report covers steam superheater

DATA on the operation of a natural gas fired, pebble heater type of steam superheater are presented in a report released by the Bureau of Mines.

The report covers about a year of operation in the gas synthesis demonstration plant at Louisiana, Mo., during which the unit performed satisfactorily. It shows operating tem-

peratures, steam flows, and heat loads during the period graphically. Also included are calculations of the thermal efficiencies of the unit under various operating conditions.

The report includes data from which the rate of wear was computed for each of two pebble types used. In general, loss from wear amounted to about half a pound of pebbles

for each million Btu transferred to the steam.

A free copy of Report of Investigations 4781, "Performance of a Pebble Heater Type Steam Superheater," by H. R. Batchelder and H. A. Ingols, Bureau chemical engineers, can be obtained from Bureau of Mines, Publication Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pennsylvania.

A.G.A. plans first economics conference

AMERICAN GAS ASSOCIATION is completing plans for its first conference ever to be devoted exclusively to economic problems of specific interest to the gas industry. The innovation will be designed primarily to assist executives of gas utilities faced with the imminent arrival of natural gas in the New England area.

This first all-day regional Economic Conference will be sponsored jointly by the Committee on Economics, American Gas Association, and the Company Managers Conference, New England Gas Association. E. W. Morehouse, vice-president, General Public Utilities Corp., New York, is chairman of the A. G. A. Economics Committee. Sessions will be held at the Hotel Statler in Boston on Thursday, May 17.

Four panel discussions will be held on subjects of great topical interest to gas utility executives in New England who are confronted with the many problems incident to conversion to mixed or natural gas. Such topics as "The Economics of Pricing After the Introduction of Natural Gas" are of more than regional concern, however, and may well attract gas company executives from neighboring states. The New England Gas Association and the A. G. A. Economics Committee have announced, therefore, that all interested gas men are invited to attend.

Detailed plans for the conference are being handled by Gordon C. Griswold, manager of economic research, The Brooklyn Union Gas Co., and Clark Belden, managing director, New England Gas Association. In addition to the topic mentioned above, subjects include "Load Growth Following Introduction of Natural Gas," "Market Surveys as a Basis for Selecting Natural Gas Loads," and "Gas Load Studies and their Significance in Natural Gas Planning."

Four members of the A. G. A. Economics Committee, E. M. Borger, president, The Peoples Natural Gas Co., Pittsburgh; F. B. Jones, manager, economic & management research, Equitable Gas Co., Pittsburgh; Mr. Griswold, and R. E. Ginna, executive vice-president, Rochester Gas and Electric Corp., will serve as chairman for each of the panels.

These four men in turn have invited qualified top-level executives throughout the country to serve as members of these panels. Among those who have already indicated their interest



E. W. Morehouse



G. G. Howie



G. C. Griswold

to serve in this capacity are Constantine Bary, rate research engineer, Philadelphia Electric Co.; W. C. Beckjord, president, The Cincinnati Gas & Electric Co.; C. H. Frazier, manager of internal audit department, The Philadelphia Gas Works Co.; Hall M. Henry, vice-president, NEGEA Service Corp., Cambridge, Mass.; George F. Mitchell, president, The Peoples Gas Light & Coke Co., Chicago; Robb Quinby, manager of rate department, The Brooklyn Union Gas Co.; Henry Tuttle, executive vice-president, Michigan Consolidated Gas Co.; and J. H. Wolfe, general superintendent of gas operations, Consolidated Gas Electric Light & Power Co. of Baltimore.

Natural gas men meeting in Dallas

RECORD ATTENDANCE is expected for the Association's annual spring meeting of its Natural Gas Department. Sessions are being held at the Baker Hotel in Dallas, May 7 and 8, with Charles E. Bennett, vice-president of A. G. A. and chairman of its Natural Gas Department, presiding.

Keynote of the meeting will be "Economy of Natural Gas in National Defense Mobilization." On Monday, May 7, the A. G. A. Executive Board, representing the combined Natural Gas and Manufactured Gas Departments, will meet in Dallas at the Adolphus

Hotel. President D. A. Hulcy of A. G. A. will preside. Mr. Hulcy is also president of Lone Star Gas Company.

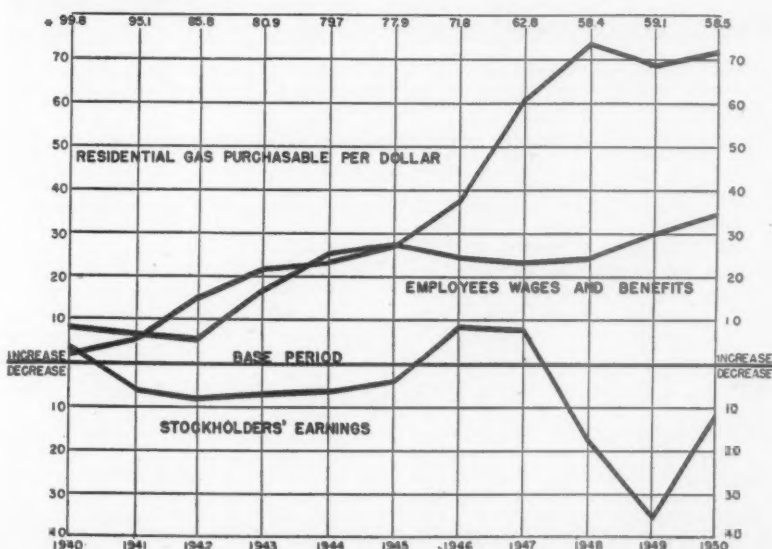
An illustrated report on the Natural Gas Department's spring meeting will appear in the June issue of A. G. A. MONTHLY.

Remember your common stock investor

REGULATORY COMMISSIONS must recognize the rights of the common stock investor. They must recognize the effect of depreciating currency on the purchasing power of earnings from common stock investments in natural gas utilities, Stuart M. Crocker, president, The Columbia Gas System, Inc., told members of American Petroleum Institute in Columbus, Ohio, on April 4.

He also declared that the big problem of the regulated natural gas industry is control of the increasing demand for natural gas which has been stimulated by its low price.

"Certainly no one today holds out any hope that the purchasing power of the dollar will soon be restored to its 1940 level," Mr. Crocker said. "In fact, it appears that the downward trend may continue. This condition is recognized by labor, which has frequently received wage adjustments to offset the increased cost of living. Why not give similar treatment to the common stockholder of a utility? For the dollars which he invested last year or ten, 15, or 20 years ago, is it fair that he should receive a return which does not recognize the depreciation in the value of the dollars he now receives? Regulation must recognize the rights of common stock investors.



Gas utility customers and employees have fared better than common stockholders. Figures above represent purchasing power of dollar with 1935-39 as base period. Source: Bureau of Labor Statistics

Large all-gas baking contest held in California



A popular display at the National Orange Show was that of Southern California and Southern Counties Gas Co. Highlighted with a New Freedom Gas Kitchen, the display told the story of gas



California's largest mass baking contest was carried out on 110 automatic "CP" gas ranges. The two winners were given their choice of any of the ranges that had been used in the contest

THE LARGEST statewide baking contest in history was staged at the 1951 National Orange Show in San Bernardino, California on March 13. Some 110 top Southern California cooks performed their culinary magic on 100 automatic "CP" gas ranges.

Co-sponsored by the National Orange Show and the California Fruit Growers Exchange, the massive baking exhibition produced 55 championship orange cakes and 55 world-beating lemon pies. Top winners in the annual affair were Mrs. Eve Herrick of Colton, California in the orange cake division and Mrs. Harry O. Myers in the lemon pie division.

As first prizes in the giant bake-off both winners were given their choice of any range used in the event. Both selected 1951 model fully automatic "CP" Wedgewood gas ranges.

Ranges used in this largest cooking contest on record included Caloric Magic Chef, Maytag, Roper, Western Holly, Gaffers & Sattler, O'Keefe & Merritt and Wedgewood. In addition, seven 1951 model BR Servel gas refrigerators were installed, one to each row of ranges.

The Natural Gas Bureau, acting on behalf of Southern California and Southern Counties Gas Companies, arranged for the gas participation in the giant event. The bureau arranged with the manufacturers to supply ranges for the contest. Each range was pre-tested, adjusted, and its oven calibrated at the warehouse before being moved to the site of the event.

On the night before the show, three separate crews swarmed into the auditorium to prepare for the cooking contest. Pre-fabricated pipe was laid, connected and tested, work benches were set up, electrical connections for the automatic juicers were installed, and the ranges were hooked up and tested. The latter job was done by a crew of skilled servicemen from the Southern California and Southern Counties companies.

Entrants in the orange cake baking contest were selected from among the hundreds who brought cakes to the National Orange Show on its opening day.

Record enrollment at gas measurement short course

ENROLLMENT at the twenty-sixth annual Southwestern Gas Measurement Short Course, held at the University of Oklahoma, Norman, Okla., April 10-12, was greater this year than ever before. Nine enrollees came from five foreign countries, while the remainder of the 942 registrants represented 34 states of the U. S. Seventy separate classes, taught by

University of Oklahoma instructors and industry men, covered every phase of gas measurement, gas regulation and related subjects.

At the opening session, M. A. Abernathy, vice-president, United Gas Corp., outlined the growth of the gas industry and the part played in this growth by the short course. The meeting was opened by Ben F. Worley, chairman of

the General Committee of the Short Course.

Dean Carson announced that the executive committee had selected James L. Griffin, Northern Natural Gas Co., Omaha, to succeed Mr. Worley as chairman of the general committee. Mr. Worley will become a member of the executive committee of the course.

Jersey Central puts changeover in the news

INTENSIVE PREPARATION for the arrival of natural gas in Cape May County and an imaginative public relations approach have paid off handsomely for Jersey Central Light & Power Co., Asbury Park, N. J.

Using background material supplied by American Gas Association, S. A. LaFaso, director of public relations for the company,

tied almost every conceivable scrap of news copy on natural gas into a series of 23" by 18" clip sheets. Banner headlines on each sheet announced that "Natural gas is here!" The story of natural gas, conveniences of modern gas appliances, company and industry facts and figures were all slanted to the community level. These forms were supplied

to local newspapers and resulted in a heavy volume of favorable press notices. The arrival of natural gas received front-page attention in many papers and was heralded by special sections in others.

All in all, Jersey Central has compiled one of the most complete "libraries" of change-over publicity yet seen.

A.G.A. awards to honor leadership, achievement

INDIVIDUALS AND COMPANIES which have made outstanding contributions to the advancement of various branches of the gas industry will be the recipients of six 1951 A.G.A. awards for achievement. The A.G.A. Distinguished Service Award, the A.G.A. Meritorious Service Award, the Beal Medal and individual achievement honors for home service, gas heating and gas summer air conditioning progress will be presented at the Association's annual convention in October.

Entries should be addressed to American Gas Association, 420 Lexington Avenue, New York 17, N. Y. Home service entries should be postmarked not later than July 31, 1951, and gas heating progress entries by September 1, 1951. Distinguished service, gas summer air conditioning and meritorious service entries are to be postmarked not later than August 1, 1951. (Names of the 1949 award winners appear in the November 1950 A.G.A. MONTHLY.)

The various honors and conditions of award are as follows:

● **A. G. A. Distinguished Service Award**—Entries to be postmarked not later than August 1, 1951.

Since 1929, the individual who has made the year's outstanding contribution to the advancement of the gas industry has been selected to receive this, the industry's most coveted honor. The award consists of an engraved certificate and a substantial sum of cash.

The honor has been variously awarded for developments in refrigeration, labor saving accounting, rate making, dealer co-operation, fortification and extension of industrial use of gas, public relations, change-over from one kind of gas to another and research development of manufactured gas production processes.

● **A. G. A. Meritorious Service Award**—Entries to be prepared on a form provided by the Association and to be postmarked not later than August 1, 1951.

Heroic action in saving life or property, either in the plant or works of any gas undertaking, or connected with the handling or distribution of the products of the industry, is the qualification for this award. The winner must have shown conspicuous judgment, intelligence or bravery in his heroic act.

The award consists of a gold medal and button plus a certificate, and is presented to the individual who has performed the most meritorious act in the gas industry each year beginning July 1 and ending June 30. It was made possible through the generosity of the late Walter R. Addicks, senior president, former Consolidated Gas Co., of New York.

● **Beal Medal**—This highest technical recognition in the industry is awarded to the sole author of the best technical paper presented at a meeting of the Association or printed during the Association year. It includes a bronze medal and a sum of money.

Originally established by the late W. R. Beal, the award is now sponsored by Ernest

R. Acker, president and general manager, Central Hudson Gas & Electric Corp., Poughkeepsie, New York.

● **A. G. A. Home Service Achievement Award**—Entries to be postmarked not later than July 31, 1951.

Outstanding advancement of modern homemaking, through promotion of interest in and better use of gas and modern gas equipment in the home, is recognized by this multiple award to directors of home service departments.

Cash awards and a bronze plaque will be presented to winners in each of three divisions: In one division are grouped those companies with home service departments with personnel totaling more than three individuals. A second division includes those companies with one, but not more than three, home service representatives. Each of these will be judged on its contribution to any one or more home service activities, such as: community or group activities, home call operation, cooperation within the gas company, equipment or sales promotion, kitchen planning, activities with educational or other groups, general department organization and overall program, or any other outstanding home service activity.

A third division makes three awards to individual members or a department head in the home service department of three different companies whose individual ideas make the greatest contribution to advancement of modern homemaking through the use of modern gas equipment.

This group of awards is sponsored by McCall's Magazine.

● **A. G. A. Gas Heating Progress Award**—Entries must be postmarked not later than September 1, 1951.

Five cash awards, ranging from \$500 to \$50 and totaling \$1,000, are made to individual members of the gas utility industry who made the greatest contribution to the advance of gas heating between September 1, 1950 and September 1, 1951.

Qualifying contributions may be: gas heating sales and promotional programs, a gas heating research project, product development, an address before a gas industry meeting, a written article in a qualified gas trade paper, or any other activity contributing in an outstanding degree to the advance of gas heating.

The award was introduced, and sponsored since 1947, by Coraire Heater Corp., Cleveland, Ohio.

● **A. G. A. Progress Award in Gas Summer Air Conditioning**—Entries must be postmarked not later than August 1, 1951.

Sales promotion, advertising and research developments of summer air conditioning are possible qualifying activities for contestants. All member gas companies are eligible.

The award comprises a progress trophy, substantial cash payments, and miniature trophies for individuals.

Servel, Inc., Evansville, Ind., sponsors this achievement award.

ECA cites A.G.A. for technical assistance



CERTIFICATE OF COOPERATION

awarded to

American Gas Association
*for furnishing technical assistance to the
Peoples of the Marshall Plan Countries
to aid them in maintaining individual
liberty, free institutions and peace.*

April 3, 1951

William S. Foster
ADMINISTRATOR

A certificate of cooperation was awarded to American Gas Association by Economic Cooperation Administration at a ceremony in Council Chambers, City Hall, New York, on April 19. Walter T. Shirley, New York City Commissioner of Commerce, acted as chairman of the ceremony. Vincent R. Impellitteri, mayor of New York, and Egbert White, director, technical assistance program, ECA, spoke. The A. G. A. Laboratories was also awarded a similar certificate

Baltimore utility announces three appointments

RAYMOND H. ARNDT, formerly assistant general superintendent—gas operations, Consolidated Gas Electric Light and Power Co. of Baltimore, has been appointed general superintendent. He succeeds L. B. Wilson, Jr., who has been retired after 39 years of service with the company.

Mr. Arndt is a graduate of University of Illinois and did special gas engineering work at Columbia. He began his utility career at Rockford Gas Light and Coke Co., Rockford, Ill., in 1923. In 1931 he entered the employ of the Baltimore Company as assistant to superintendent, gas manufacturing, becoming superintendent in 1938 and assistant general superintendent of gas operations in 1950.

Cameron C. Barr, formerly superintendent, gas and steam distribution, was appointed assistant general superintendent succeeding Mr. Arndt. Mr. Barr was educated at Swarthmore

and began his utility career with Harrisburg Gas Company as a cadet engineer. From 1927 to 1929 he was with Des Moines Gas Co., Des Moines, Iowa, as a cadet engineer. He entered Consolidated Company in May 1929 as assistant to general superintendent and was appointed superintendent, gas and steam distribution, in 1950.

Thomas J. Dwyer, formerly assistant to general superintendent, has been appointed superintendent, gas and steam distribution, succeeding Mr. Barr. Mr. Dwyer is a graduate of Johns Hopkins University and did special work at Drexel Institute. He began his ex-



R. H. Arndt



C. C. Barr



T. J. Dwyer

perience in 1923 with Philadelphia Suburban Counties Gas and Electric Company as engineering assistant and entered Consolidated Company in December 1930 as a technical assistant. All three men are members of American Gas Association.

Personal and otherwise

Stilwell retires from Consolidated Edison

JOHN STILWELL, vice-president, Consolidated Edison Co. of New York, Inc., retired April 1 after 42 years of service in the company and its predecessors. He is a member of American Gas Association.

Mr. Stilwell an advocate of safety education in industry, served as president of American Museum of Safety, Greater New York Safety Council, and National Safety Council.

In the years that followed his first job with

Consolidated Gas Company in 1909, he was responsible for introduction in that company of modern punch-card payroll systems and the changeover from horse-drawn to motor transport. As Consolidated Edison vice-president, his jurisdiction included the transportation, payroll, insurance, real estate and resuscitation departments. He has also been chairman of Consolidated Edison System's central safety committee since its inception in 1944.

Two new officers elected at Rochester

ELECTION of two officers has been announced for Rochester Gas and Electric Corp., Rochester, N. Y. Paul J. W. Miller has been named secretary, and Harold W. Nichols, treasurer, following the retirement of Frederick H. Patterson, secretary-treasurer, after 41 years of service with the company.

Mr. Miller, formerly assistant secretary, has served the company for 37 years in various auditing and accounting department posts.

Mr. Nichols joined Rochester Gas & Electric in 1930 as auditor and advanced to assistant treasurer in 1941. Prior to his service in Rochester, he was employed by New York

State Electric and Gas Corp., Ithaca, N. Y.

Harold S. Weatherby will assume the duties of superintendent of general accounting, in addition to retaining his title of assistant secretary.

Both men are active members of the accounting sections of American Gas Association and Edison Electric Institute.

Trembly appointed vice-president in Philadelphia

FRANK H. TREMBLY, JR., has been appointed vice-president in charge of sales, The Philadelphia Gas Works Company.

A veteran of 27 years experience in the gas industry, Mr. Trembly has been sales manager and a director of The Philadelphia Gas Works Company since March 1949.

Mr. Trembly has been active on many committees of American Gas Association and Pennsylvania Gas Association. He was chairman of the Industrial and Commercial Gas Section and vice-president of A. G. A. during 1938-39. He was president of Pennsylvania Gas Association in 1946-47.

Mr. Trembly graduated from Carnegie Institute of Technology in 1924 in chemical engineering. He was employed by Surface Combustion Corporation in engineering and sales work before joining Philadelphia Gas Works in 1931. He also served as supervisor of the industrial division and assistant sales manager.

Cassidy heads new department at Peoples Gas

FORMATION of a new public relations, publicity and advertising department has been announced by The Peoples Gas Light & Coke Co., Chicago. Remick McDowell, secretary and assistant to the chairman, has been given responsibility for the company's public relations, publicity and advertising.

Clayton G. Cassidy, advertising manager of the company for 17 years, has been named director of public relations and advertising in charge of the new department. Three managers have been named, each

responsible for a specialized activity. Raymond W. Fenton, formerly assistant advertising manager, has been appointed manager of advertising. Daniel H. Mowat has been advanced to manager of press relations, and Charles J. Morse, to manager of publications.

Mr. Cassidy is currently chairman of the Domestic Gas Copy Committee, American Gas Association. He was associated with other utilities in the Chicago area prior to joining The Peoples Gas Light & Coke Company in

1934. He has been active as an advertising and public utilities consultant.

Mr. Fenton is also a member of American Gas Association. Mr. Mowat is currently a member of the A. G. A. Publicity & Advertising Committee.



C. G. Cassidy

Officers moved up by East Ohio Gas Company

WILLIAM G. ROGERS has been elected president, and J French Robinson chairman of the board, The East Ohio Gas Co., Cleveland.

Mr. Robinson is a past-president of American Gas Association and former chairman of the Association's Natural Gas Department. He is serving currently as chairman of the A.G.A. National Defense Committee and a director of A.G.A. Mr. Rogers is serving on the A.G.A. Committee on Review of Constitution and Bylaws.

Mr. Rogers joined the company in 1914 as a beginner in the engineering department.

Since then he has held the positions of chief statistician, rate engineer, secretary-treasurer, vice-president and, most recently, executive vice-president.

Mr. Robinson has spent more than 30 years with the Consolidated Natural Gas Company's group of companies. He has been an industry leader in the orderly development and promotion of the use of natural gas. Before becoming president of East Ohio in 1940, he served as president of The Peoples Natural Gas Co. and The New York State Natural Gas Corp., Pittsburgh.



W. G. Rogers



J. F. Robinson

Cincinnati officer retires after long service

EDWIN R. ROTHERT retired on May 1 as vice-president in charge of the gas commercial department, The Cincinnati Gas and Electric Co., after 41 years with the company. At the same time, Milton J. Pfeiffer, manager of the gas production department, was elevated to vice-president in charge of the gas department.

Active for many years in American Gas Association, Mr. Rothert served as chairman of the High Pressure Power Boiler Committee, chairman of the A. G. A. committee charged

with publishing gas appliance manuals, and as a member of numerous committees of the A. G. A. Laboratories. In 1948 the Association elected him to the "Hall of Flame." During World War II he served on the National Conservation Committee for Cincinnati District.

Philadelphia Electric chairman wins Powell Award

HORACE P. LIVERSIDGE, chairman of the board, Philadelphia Electric Co., has been presented with the Powell Award in recognition of his "outstanding achievements in behalf of the commercial and business life of Philadelphia." The award consists of a gold

medal and a check for \$10,000.

The Powell award, to be made every four years, was established under the will of the late Edward Powell, textile manufacturer. It is designed to give public recognition to the individual who, in the opinion of the award

committee, has made the greatest contribution toward the business life of Philadelphia. The award was presented by Mayor Bernard Samuel at a dinner attended by prominent business, industrial, and civic leaders.

North Shore elects secretary-treasurer

DIRECTORS of North Shore Gas Co., Waukegan, Ill., have elected C. E. Packman as secretary-treasurer of the company succeeding A. C. Winters. Mr. Winters remains on the board of directors.

Mr. Packman is a former chairman of the Accounting Section, American Gas Association. He has had 30 years of experience in public utility accounting, mostly in Chicago and the Midwest. A certified public account-

ant, he is a member of American Institute of Accountants, Controllers Institute of America, Advisory Board of International Accountants Society, and a committee member of Edison Electric Institute.

Personnel changes named by Equitable Gas

THREE PROMOTIONS have been announced at Equitable Gas Co., Pittsburgh. John T. Brown has been named general counsel for Equitable Gas Company and affiliated gas and oil companies. Thomas H. Evans has been appointed assistant to the vice-president in charge of operations at Equitable Gas, and George D. Porter has been made manager of the valuation department.

Mr. Brown has been attorney for Equitable Gas since April 1950. Prior to that, he served in the law department of Philadelphia Company and subsidiary companies. He succeeds B. H. Smyers, Jr., who recently resigned as counsel to devote his time to personal affairs.

Mr. Evans has served Equitable Gas Company since 1937, and was formerly assistant general sales manager. He is a member of American Gas Association and Pennsylvania Natural Gas Men's Association.

Mr. Porter has been with Equitable Gas since 1929, and at the time of his latest promotion was manager of the valuation division. He will supervise operations of the valuation and property records department. He is



J. T. Brown



T. H. Evans



G. D. Porter



D. W. Frye

a member of Engineers' Society of Western Pennsylvania and American Gas Association.

Dan W. Frye, director of promotion, resigned his position in April to establish an independent advertising agency, specializing in the industrial field.

Mr. Frye joined the gas company in 1929 as an industrial gas sales engineer. Ten years later he entered the promotion field and has served in various promotional and advertis-

ing capacities. Active in American Gas Association, Mr. Frye has served two terms as chairman of the Window and Store Display Committee, A. G. A. Residential Gas Section. He has also served as a member of the Section's Managing Committee. He is the author of numerous industrial gas and promotion articles. For many years he has represented Moore Publishing Company gas magazines as contributing editor in his area.

Associated organization activities

New England holds forum on natural gas

GAS INDUSTRY EXPERTS from all over the United States assembled in Boston on March 29 and 30 to help New England companies prepare for the long-heralded arrival of natural gas. The occasion, annual business conference of The New England Gas Association, drew an alltime record attendance of 814 delegates. Sessions developed into a forum on industry problems—a striking example of the cooperative approach to basic issues.

An unlimited future for the gas industry was predicted by D. A. Hulcy, president, American Gas Association.

Research, promotion and the introduction of natural gas into new markets were cited by Mr. Hulcy as reasons for marked industry advances in recent years. "The advance of natural gas, with its unifying influence," he predicted, "will draw our industry into a closer knit pattern of solidarity."

Fifteen or 20 years ago, "pessimism about the gas industry's future was rampant. In 1935-1936, public figures went out of their way to call us moribund. There were, however, men of courage in our industry who had faith in gas. Through the American Gas Association a national cooperative advertising campaign was started in 1935 to glamorize the use of gas in the home. By means of colorful advertisements in leading consumer magazines, millions of housewives were able to see that their ancient vintage gas appliances were not typical of the modern gas industry. By 1945, this campaign had done much to create a renewed interest in our industry; but it was not enough and that year a group of farsighted individuals conceived and put into effect the industry's PAR Plan. It doubled the amount of funds spent for national advertising, multiplied the cooperative A. G. A. research program and quadrupled national promotional activities. It acted as an immediate shot in the arm to raise the morale of the industry's personnel. Aside from the many tangible benefits which have risen from this program, there is no longer any talk about the Cinderella gas industry being consigned to oblivion.

"But by far the most important development has been the spectacular march of natural gas to many new communities. If the industry needed a Prince Charming to captivate the imagination, it was and is natural gas.

"Today, two tasks face us: One is the ability of our industry to assume the heavy industrial work of assisting in turning out the implements of war. The other is to make sure that the service we render to millions of American homes will be maintained at a high rate of efficiency. We are better prepared to face the present situation because of continuing, normal activities of our associations. Industrial advancement has come about largely from research that exerts a steady pressure on an advancing frontier. A. G. A. research under the PAR Plan continually exerts that pressure.

"There has never been a time in the history of our industry when we needed more to call upon all our strength to maintain our industry in a favorable position and to do what must be done to support our country in its grave emergency. As we face the uncertainties of the times, let us continue to have faith in our manifest destiny. Truly, for the gas industry, 'The Sky Is The Limit'."

Six recent highlights of the industry in the New England area were cited by Retiring President J. A. Hiller of NEGA. Mr. Hiller is assistant vice-president, Portland Gas Light Co., Portland, Maine. "We have the further growth of our output, the continued trend toward a high Btu gas, the increased use of liquefied petroleum gases for supplementary purposes, the progress of catalytic cracking, a growing shortage of appliances through the use of which we must sell our basic product and a never-ending squeeze upon our individual company net profits. These six developments indicate that we are continuing to make constructive progress of several kinds."

A continued and even intensified sales program will be necessary with the advent of natural gas in New England, cautioned Irving K. Peck, vice-president and general manager, The Manufacturers Light & Heat Associated Companies, Pittsburgh. "Natural gas will inject new health and vigor into the New England gas industry. But . . . the same com-

petitive factors . . . will still be there," he said.

Mr. Peck suggested that members of the New England gas industry immediately have their sales departments lay out a five year estimate of gas requirements, by classes, and make plans to meet these demands. "List for each of these five years, your estimated peak day requirements, and the sources of gases to meet them. All estimates should be based on weather bureau monthly mean, and the peak day minimum mean temperature.

"Determine your present, and estimate your future, customer usage factors, for the residential base load, central fired house heating, incidental heating, industrial and commercial loads. Keep a record of actual sales vs. these estimates. Correct the actual each month for the deviation from the normal mean temperatures. Experience has shown that companies going to natural gas are apt to underestimate considerably their long range future requirements. You must make accurate estimates, if you expect the pipe line company to provide for your rapidly growing demands."

Clark Belden, NEGA managing director, reported a 54½ percent growth during the last five years, from 194 to 300 members. During the same period, individual memberships rose 49 percent from 807 to 1,201.

J. French Robinson, president, The East Ohio Gas Co., Cleveland, Ohio, outlined a five-point program for the gas industry to follow to meet the war emergency. "Plan carefully to meet the impact of manpower and steel shortages at a time when our load is likely to continue its sharp upward swing," he advised. "Work closely with community civil defense organizations, to make sure that our own preparations keep pace. Seek aggressively to correlate our operations and co-operate most effectively with the national defense program by forcibly urging that a single Federal agency be created for handling of



Officers for the ensuing year were elected during NEGA conference. Front row, left to right, are: Incoming President G. G. Howie, Cambridge Gas Light Co.; Retiring President John A. Hiller, Portland Gas Light Co.; First Vice-President and Program Committee Chairman Sherman R. Knapp, The Connecticut Light & Power Company. Rear row, Second Vice-President Jesse L. Johnson, Providence Gas Co.; Nominating Committee Chairman Earl H. Eacker and Treasurer Otto Price, both Boston Consolidated Gas Company, and the new clerk, Clark Belden, managing director

all matters related to defense mobilization of the gas utilities."

In addition, he urged, "We should contact our Senators and Representatives urging all the support humanly possible for passage of Senate bill 1084 to amend the Natural Gas Act, as recommended by the NARUC, thereby eliminating the confusion and inefficiency of dual regulation." And, lastly, "we can continue the progress of which our industry can already be so proud."

Frederic O. Hess, president, Gas Appliance Manufacturers Association and president, Selas Corp. of America, urged New England gas companies to standardize their fuel with the introduction of natural gas.

He pointed out the confusion and inefficiency that has resulted from many utilities having established local requirements for gas

appliances "instead of accepting the A. G. A. requirements." In this connection, he cited the accelerated growth of the electric industry after the establishment and universal acceptance of the Underwriters' Laboratory seal.

"The gas industry established the A. G. A. Laboratories to perform a similar function, but local narrow interests undermine this aim to the disadvantage of the entire industry. It is doubtful that the entire gas industry will ever have again the opportunity to standardize its fuel, but at least New England has now a unique opportunity to do so for its area. Such gas uniformity would obligate the appliance industry to assistance, to promotion and to development to everyone's gain."

Gordon G. Howie, vice-president and general manager, Cambridge Gas Light Co., was elected president for the association's 1951-

1952 year. Also elected were: first vice-president—Sherman R. Knapp, executive vice-president, The Connecticut Light & Power Co.; second vice-president—Jesse L. Johnson, vice-president, Providence Gas Co.; treasurer—Otto Price, vice-president, Boston Consolidated Gas Co.; and clerk—Clark Belden, managing director, NEGA.

Named to be division chairmen were: Accounting—Thomas W. Barry, auditor, Blackstone Valley Gas & Electric Co.; Industrial—Lemuel J. Rogers, industrial salesman, Boston Consolidated Gas Co.; Manufacturers—Willard C. Wolff, New England manager, Affiliated Gas Equipment, Inc.; Operating—Donald Whitcomb, general superintendent, Providence Gas Co., and Sales—Joseph K. Rainey, sales manager, New Bedford Gas & Edison Light Company.

GAMA completes most productive meeting

SIXTEENTH annual meeting of Gas Appliance Manufacturers Association on April 16 and 17 probably was the most significant in its history.

The two-day session at the Drake Hotel in Chicago helped define divisional and over-all problems and objectives of the industry. It also signalized the start of a long-haul public relations and sales promotion program for the industry as a whole.

In a militant keynote address to the more than 500 delegates, GAMA President Frederic O. Hess urged the gas industry to step up its research and development of services, products, and markets. Mr. Hess, president of Selas Corp., Philadelphia, decried the failure of many utilities to act cooperatively and on a nationwide basis. He recommended the adoption of standards of performance applying mutually to utilities and appliance manufacturers "if we are to stay in business, do justice to our customers, and grow with the truly tremendous potential market."

Unanimous adoption by GAMA of its new public relations program, Mr. Hess said, "declares our faith in the gas industry . . . and lifts us above local conflicting interests and policies."

A general session on April 16 elected a new slate of officers to take over on October first. Louis Ruthenburg, chairman of the board, Servel, Inc., Evansville, Ind., will succeed Mr. Hess as president of the appliance group. Other newly-elected officers include: first vice-president—A. B. Ritzenthaler, Tappan Stove Co.; second vice-president—James F. Donnelly, A. O. Smith Corp.; treasurer—Lyle C. Harvey, Affiliated Gas Equipment, Inc., and secretary—H. Leigh Whitelaw, managing director of GAMA.

Meritorious service awards for achievement were presented to 13 gas appliance industry leaders. Recipients were Harold E. Jalass, vice-president, Cribben & Sexton Co., Chicago; E. Carl Sorby (in behalf of Stanley H. Hobson, president, Geo. D. Roper Corp., Rockford, Ill., and past-president of GAMA); J. F. Ray, sales vice-president, General Controls Co., Glendale, Calif.; Walter F. Muhlbach, director of distribution and research, Florence Stove Co., Gardner, Mass.; Floyd Gaunt, secretary-treasurer, Reynolds Gas Regulator Co., Anderson, Ind., and I. E. Seith,

sales manager, Forest City Foundries Company, Cleveland.

Others honored at the evening session were C. H. Rippe, Jr., home appliance sales director, Hamilton Manufacturing Co., Two Rivers, Wis.; E. J. Horton, assistant to the president, Robertshaw-Fulton Controls Co., Youngwood, Pa.; F. Donald Hart, executive vice-president, Temco, Inc., Nashville, Tenn.; C. W. Nessel, Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.; J. W. Farren, chief engineer, Ruud Manufacturing Co., Kalamazoo, Mich., and John C. Diehl, president, American Meter Company, Erie, Pennsylvania.

Interpretation of price stabilization, control of materials, and armed-services procurement regulations affecting the appliance industry highlighted the April 17 general session.

Harold Wess, director of the consumer durable goods division, Office of Price Stabilization, warned GAMA delegates that "the one-quarter-war, three-quarters-peace status in the nation is much more dangerous than all-out

war, where inflationary tendencies are concerned." When there is no question about a nation's military involvement, he said, it knuckles down to the austerity of war and adjusts its economy accordingly. Price controls, if more distasteful, are nevertheless more necessary under present conditions, he added.

Courtney Johnson, Studebaker official and consultant to the National Production Authority on the Controlled Materials Plan, defined the workings of CMP. A census of all materials is, of course, completed, he said, but the immediate future of control remains as vague as the war outlook.

Speaking for the Supply Corps of the U. S. Navy, Commander Eugene J. Blandin commended the gas appliance industry for its active and liberal participation in defense production.

George F. Mitchell, first vice-president, American Gas Association, and president, The Peoples Gas Light & Coke Co., Chicago, urged a public-service partnership of gas utilities and



GAMA President-Elect Louis Ruthenburg (left), chairman of the board, Servel, Inc., is congratulated by Retiring President Frederic O. Hess, president, Selas Corp. Other officers elected at GAMA annual meeting include: first vice-president, A. B. Ritzenthaler, Tappan Stove Co.; second vice-president, James F. Donnelly, A. O. Smith Corp.; treasurer, Lyle C. Harvey, Affiliated Gas Equipment, Inc., and secretary, H. Leigh Whitelaw. The new officials will assume office October 1

GAMA meeting

(Continued from page 39)

gas appliance producers to consolidate the tremendous gains made by the industry in recent years.

"The new relationships between utility and manufacturer, with all their ramifications as to dealers, distributors, regulatory and legislative authorities, and even touching our respective trade associations, require that we re-appraise the situation from time to time and make sure that our combined efforts are properly directed to attain our maximum potentialities," Mr. Mitchell said. He observed that meetings of GAMA and A. G. A. initiated last year, set in motion a pattern of cooperation "which will serve to maintain a healthy area of understanding between us."

Highlight of GAMA's second-day general session was an address by economist Beardsley Ruml, who discussed the effects of excess profits taxation on American business.

Dollars consumed at a high marginal rate of excessive taxation, he pointed out, are worth 23 cents. While urging business to avoid being wasteful, Ruml recommended that management plan immediately to consider self-development projects that would give one hundred cents of return on each 23-cent dollar. He suggested, for example:

Research aimed at developing new products and new designs; tooling up for new markets; testing products, both old and new, under various conditions which were never before investigated; reorganizing plants for better flow of production; importing experimental skills, materials, and machines; "non-

prodigal" advertising; opening branch offices and warehouses in uncertain areas; market research, promotion, cultivation of customers; developing new and better packaging; public relations and community relations sounding out Point IV opportunities abroad; and hiring new people where needed, especially filling out executive staffs to permit better training of those who some day will step into top jobs.

Individual divisional meetings occurred at intervals throughout the GAMA convention. The program committee consisted of Chairman Leland M. Feigel, Servel, Inc., C. H. Rippe, Jr., H. E. Jalass; H. E. Handley, Handley Bron Meter Co.; T. T. Arden, Grayson Controls Division, Robertshaw-Fulton Controls Co., and L. A. Brand, Empire Stove Company.

PCGA workshop assesses home service activities

A WIDE VARIETY of home service trends and activities were covered at the 1951 annual home service workshop conducted April 4 and 5 by the home service committee of Pacific Coast Gas Association. Ruth Kruger, home service director, Central Arizona Light and Power Co., presided as chairman.

Site of the two-day meeting was the new and impressive Valley Garden Center in Phoenix, Arizona. Feature events on the program included talks on "School Institutes;" "Dealer Floor Demonstrations;" accounts of activities underway in the gas companies represented; demonstrations on gas equipment—the range, refrigerator and laundry dryer; talks by home economists from five national food companies and one national magazine; and addresses by educators in the Phoenix area. John Kimball, vice-president, Central Arizona Light and Power Co., addressed a group of 100 at the general dinner program on the subject, "The American Proposition."

Participating in the conference discussions were Frank N. Seitz, vice-chairman, PCGA sales and advertising section and sales manager, Southern Counties Gas Co., Los Angeles, and J. E. Kern, assistant managing director, PCGA. Albert W. Smith, advertising manager, Central Arizona Light and Power Co., opened the program in true western style, providing publicity for the annual Phoenix Rodeo which was to open the following week.

Assisting Miss Kruger and the Phoenix company as hosts were Tucson Gas, Electric Light and Power Company—Lois Ann Schibley, home service director, and Arizona Edison Company—Muriel Kodis, home service director.



Home service directors of 12 western gas companies attended the Pacific Coast Gas Association's Home Service Workshop, Phoenix, Arizona, April 4-5. Utility representatives in front row (left to right) are Katherine Rathbone, Southern Counties Gas Co.; Muriel Kodis, Arizona Edison Co.; Alberta Moreau, Northwestern Utilities Co.; Anne Whipple, Seattle Gas Co.; Workshop Chairman Ruth Kruger, Central Arizona Light and Power Co.; Frank N. Seitz, Southern Counties Gas Co.; Lois Schibley, Tucson Gas, Electric Light & Power Co.; Gladys Price, Southern California Gas Co.; Phyllis Snow, Mountain Fuel Supply Co. and Marguerite Fenner, Pacific Gas and Electric Co. Among others in the second row are Marjorie Hume, San Diego Gas and Electric Co.; Nova Graham and Beatrice Miller, British Columbia Electric Co., and Jonniemai May, Southern Union Gas Co.

Informality will be the atmosphere of the conference. It is hoped that all gas men who attend will benefit not only from the relatively brief statements of the panel members but also from the subsequent discussions among the audience and participants alike.

The Economics Committee believes that such conferences are suitable devices for analyzing economic problems confronting the gas industry. If that belief proves justified by the

results of the coming Economic Conference in Boston on May 17, similar national or regional conferences may be scheduled later in other parts of the country.

Anyone outside New England interested in attending the conference should communicate with Otto E. Zwanig, secretary of the Economics Committee, American Gas Association, 420 Lexington Ave., New York 17, N. Y.

A-bomb exercise

(Continued from page 13)

* has spent weeks selecting and microfilming its essential records. The originals of these records are, of course, retained by the company; one microfilm set has been stored in an underground vault of a local bank and another has been placed in a safe storage place far removed from the

local community.

President Hudson W. Reed, addressing the company meeting, stressed the importance of cooperation with local civil defense leaders. Details of this liaison gave employees a vivid picture of the vital role which gas service would play in an emergency.

Perhaps your company has already staged a meeting of this type. On the

other hand, you might be faced, as many companies are, by a serious let-down in employee interest. It is vitally important that utilities realize their role in preparing to meet the consequences of enemy aerial attack. Meetings of this type are important; so are special disaster exercises, cooperation with local authorities and impressing the importance of your defense program on company employees.

Or, you may be faced by another problem. Several gas company executives have complained that their companies' damage repair programs are receiving so much attention that protection against espionage and sabotage is almost overlooked. Obviously, the utility is useless to its community if it is wide open to sabotage and espionage. It is essential, therefore, that vital facilities be provided with entrance control of personnel and vehicles, and maintained at peak operating efficiency. Participants in this phase of the defense program, whether they are on full time guard duty, or merely standing by as reserves, must be kept alert at all times. Periodical inspections can help keep these men on their toes. A thorough system of checking their efficiency is an immediate necessity.

One other matter that has received little attention so far is the replacement of key personnel in the event of disaster.

Several oil companies on the East Coast have met this problem by making special arrangements to replace directors, officers, and other key men in the event they are killed. One company has selected alternates who temporarily would assume the duties of men put out of action all the way down the line of authority to the district sales office. Alternate production and supply systems and banking arrangements have also been set up by these companies. Outgoing pertinent information is being screened more closely than ever before.

Thirty suggested steps for consideration in the development of plant and personnel protection programs were listed on pages 4 and 5, January 1951 A. G. A. MONTHLY. Use this list and the Philadelphia activities described above to check the completeness of your own company's defense program.

Memphis conferences

(Continued from page 25)

of magnesium anodes in waters of different salt content.

"The Performance of Impressed Current Ground Beds" by A. W. Peabody, Ebasco Services, Inc., New York, described experiences on steel, carbon and graphite anodes used to introduce cathodic protection current into the earth from an external source such as a rectifier. Results of tests by NACE indicate that carbon and graphite anodes in coke breeze backfill are a superior type of ground bed and if properly installed can be expected to give long life.

Mr. Peabody described construction methods

for installing anodes singly or in multiple, in earth containing a high resistivity layer, and making the insulated electrical connections between the rectifier and the ground bed. In operating the anodes, care should be taken, he said, not to exceed the recommended maximum current densities of 0.25 ampere per square foot of anode surface in earth backfill, and 1.0 ampere per square foot if the anode is in carbonaceous backfill.

"The Mechanism of Cathodic Protection" was discussed by Ralph Horst, K. K. Reid and G. C. English, Aluminum Co. of America. This paper was presented by Mr. Horst, with the aid of a demonstration board containing elements representing anodes and cathodes and a cathodic protection source, and voltmeters and ammeters in the simulated corrosion cell.

It was shown that corrosion occurs because of differences of electric potential on the surface of buried or submerged structures. These differences of potential are the driving forces which cause electric current to flow between the metal and electrolyte, with accompanying loss of metal at the anode. Cathodic protection is achieved by applying a direct current of sufficient magnitude from an external source through the soil to the structure. The effect of this external current is to neutralize the driving force of the corrosion circuit.

This is accomplished by two mechanisms acting singly or in combination, namely (1) IR drop of the external current flowing through the cathode resistance, and (2) polarization of the local cathode. When the sum of these neutralizing factors is equal or greater than the open circuit potential difference between the local anode and the cathode, cathodic protection is achieved because the net driving force of the corrosion cell is reduced to zero.

The committee vice-chairman, A. D. Simpson, Jr., United Gas Corp., Houston, presided at the second corrosion luncheon. Discussion centered on instruments for electrolysis, corrosion and cathodic protection testing.

Copies of the Reference Book on Instruments were distributed at the registration desk during the conference. This book was prepared by the Subcommittee on Instrumentation, M. C. Miller, chairman, in response to a demand by corrosion engineers of gas utilities for a convenient reference book on instruments.

First of two sections contains articles by committee members describing the characteristics and uses of the various types of instruments. Also included are suggestions regarding the instruments to be used by the field engineer and maintenance men for various types of corrosion measurements. The second section contains catalog sheets and descriptive circulars supplied by instrument manufacturers. These catalogs are grouped in subsections according to type of instrument, i.e. voltmeters and ammeters, combination test sets, earth resistivity instruments, pH meters, pipe locators, holiday detectors, reference electrodes and miscellaneous testing equipment.

In conjunction with the luncheon conference, a display of typical instruments was held under the auspices of the Subcommittee on Instrumentation. These instruments had been sent by the manufacturers without cost to American Gas Association. At the luncheon

conference the various types of instruments were discussed in non-technical terms and their advantages and limitations pointed out by the various committee members. Participants in the panel discussion and the respective types of instruments discussed were as follows:

Pat H. Miller, Accuracy of electrical instruments.

M. C. Miller, Voltmeters, millivoltmeters, ammeters, Susquehanna meter.

C. L. Woody, Combination sets.

A. W. Peabody, Earth resistivity instruments.

R. L. Featherly, pH measurements.

J. O. Mandley, Coating fault locators.

W. O. Wade, Pipe locators.

Meters and metering

LUNCHEON conferences on meters and metering in Memphis were well attended on both days. It has been the custom of the meter subcommittee for several years to assign subjects for study to its various members who report on their findings or lead discussions at the luncheon conferences.

At the Monday conference, James Webb, Consolidated Edison Co. of New York, Inc., described a system he had devised for routine sampling of new meter shipments. By means of this system, many small defects in workmanship or design can be detected before they can cause trouble to either the utility or the manufacturer.

G. G. Dye, Southern California Gas Co., reported on a survey of diaphragm materials. He stated that the supply picture is good for both leather and synthetics. The latter are growing in favor with the natural gas situations but have encountered some difficulty when used in certain types of manufactured gas.

R. F. Diehl, Laclede Gas Co., St. Louis, Mo., gave a detailed analysis of the various factors affecting slide valve performance. He covered such items as valve table warpage, improperly designed covers, types of material, etc., and produced exhibits to illustrate his conclusions.

Howard Houghton, Michigan Consolidated Gas Co., described his company's experience in changeover to natural gas. The affect upon meters was more pronounced in those areas which originally had distributed carburetted water gas than in those distributing coke oven gas.

F. C. Morey, Bureau of Standards, stated the results of a two-year study on proper procedure for capacity testing of meters. Work on the five ft. size completed a year ago indicated that pressure taps could be located as close as one pipe diameter from the inlet and outlet of the meter. However, this year's work on larger meters indicates that pressure taps on the inlet side must be located at least two pipe diameters from the meter inlet in order to prevent turbulence.

For the sake of simplicity and uniformity, Mr. Morey recommended that a spacing of two pipe diameters be adopted as standard for all sizes. He is rewriting the 1922 testing procedure of 1922 based on his findings. After due consideration by the committee, the revised procedure will be submitted to A. G. A. for approval.

Representing Superior Meter Co., Major G. Powers gave a talk on the supply picture as to the various essential materials required to

make tin gas meters. This was followed by a color motion picture depicting the manner in which American Meter Company machines its metric iron or aluminum case meters. A. Benson, American Meter Co., gave additional information on these operations.

At Tuesday's luncheon conference, William Menet, The Peoples Gas Light & Coke Co., Chicago, described his company's procedure for repairing leaking meters in the field. It has been their experience that it is more economical to fix leaks on the district than remove the meter in a premature stage of the periodic change cycle.

A lively discussion on job training in meter shops was led by James Chrisman, The East Ohio Gas Co., Cleveland. It developed that there were so many aspects to this subject that it may prove worthwhile to allot a greater portion of time to personnel problems in future luncheon conferences.

Some interesting aspects of the economics of metering were discussed by George Bachmann, Public Service Gas and Electric Co., Newark, N. J. In addition to his own findings based on mathematical calculations, Mr. Bachmann showed slides illustrating the findings of other engineers for comparative purposes. He also showed a slide illustrating his ideas on a possible design for a disposable meter.

A. C. Bateman, Providence Gas Co., was unable to attend the conference, but his paper on Safety in the Meter Shop was read by the chairman. The bibliography of articles on meters and metering, a project supervised by C. V. Morey, Consolidated Edison Co. of New York, Inc., will be revised and reprinted at five-year intervals. Supplemental sheets will be available in the intervening years.

Gilbert Estill, vice-chairman of the Meter Committee, described the manner in which Oklahoma Natural Gas Company has standardized meter settings for large volume measurement.

Other subjects which were discussed briefly at the Tuesday conference were: "Wrinkles," inspection and testing of base pressure indexes, Government priorities, and the "Q" meter. The last is a proposed re-design of the tin meter to accomplish smaller size and greater capacity.

A sound motion picture describing manufacture of tin gas meters in the Dubois Plant was shown by Rockwell Manufacturing Company. C. Muehlberg of that company extended an invitation to visit the plant in person. Mr. Stewart of Sprague Meter Company completed the manufacturers' portion of the program by detailing the Government restrictions affecting the manufacture of aluminum or iron case meters. He also noted the measures undertaken by his company to comply, while still maintaining production.

● Following is a series of news items on activities of the A. G. A. Operating Section submitted by the Section's new Editorial Committee. Jesse S. Yeaw, Rochester Gas & Electric Corp., chairman of the editorial group, is conducting an intensive campaign to keep the gas industry informed of the progress attained by the various working groups in the Operating Section. Please submit your ideas and suggestions for news articles to Jesse S. Yeaw, laboratory director, Rochester Gas & Electric Corp., 89 East Avenue, Rochester 4.

High Btu group active

THE High Btu Gas Subcommittee of the A. G. A. Production Committee has arranged two timely papers for the Production and Chemical Conference in May.

R. J. Horn, manager of the gas department, Central Hudson Gas and Electric Corp., Poughkeepsie, N. Y., will describe their reverse blast, three-shell oil gas set, its operation on gas oil and heavy oil, the results obtained from substituting high percentages of this gas for natural gas and many other points of interest to production men.

Hawley Taussig, manager of the gas department, Koppers Co., will give a description of the regenerative partial combustion process for the production of high Btu oil gas which is in operation at Johnson City, Tennessee. V. M. Perry, The Brooklyn Union Gas Co., is planning a survey of High Btu Gas Production equipment, which, when published, should be of use and interest to gas production men.

The High Btu Luncheon Conference on Tuesday afternoon, under chairmanship of G. G. Howie, vice-president, Cambridge Gas Light Co., promises to be a sellout. In addition to the large volume of discussion topics usually submitted by those attending the luncheon, the following are contemplated:

- Safety in High Btu Operation
- Reconstruction of Existing Plant to High Btu Plant
- Checker Brick
- Results from Different Types of Plant—Unit Figures, Cycles and Temperatures.
- Oils Available and Method of Introduction
- Scrubbing and Residuals
- Gas Analyses, Flame Characteristics and Interchangeability
- Present Research A. G. A., I. G. T. and Others

The A. G. A. Safety Committee is making an all out effort to help the gas industry to migrate from above average to below average in the industrial accident statistics. The Higher Btu Subcommittee is anxious to support this effort and has appointed W. H. Isaacs, superintendent, The Peoples Gas Light and Coke Co., Chicago, as safety representative to promote safety in high Btu operation and to work with the A. G. A. safety committee.

Those interested in high Btu gases should not miss the report by the Gas Production Research Committee on a process being developed for oil gasification and an Institute of Gas Technology report on Volumetric Apparatus and Methods Employed for Gas Analyses.

—J. W. Carroll, Philadelphia Electric Co., chairman.

Cooperation on purging

MEMBERS of the A. G. A. Purging Committee met on April 2, 1951 with representatives from the Technical and Standards Committee of the Liquefied Petroleum Gas Association. The group considered the Purging Committee's proposed procedure for purging liquefied petroleum gas equipment. This

procedure was presented to the gas industry in the Spring of 1949. Members of the Purging Committee who attended were: J. S. Yeaw, Rochester Gas & Electric Corp.; J. W. Penny, Jr., Boston Consolidated Gas Co.; H. E. Ferguson, The Peoples Gas Light & Coke Co., Chicago, and G. R. King, Philadelphia Electric Company.

Discussion centered around the application of the purging procedure to various types of equipment used by the LP-gas industry. Mr. Menuet, The Shell Oil Co., Kansas City, and chairman of the LPGA Committee, reported that he had made a purging test on a 30,000-gallon tank applying the principles outlined in the A. G. A. procedure. He reported that he found them very satisfactory and was glad to know that such procedures were available.

Discussion of other phases of the report took place and as a result of the meeting the A. G. A. Purging Committee secured the valuable cooperation and approval of the Liquefied Petroleum Gas Association. The members of the Purging Committee were gratified with the results of the meeting.

Various other phases of the report were discussed. Purging Committee members expressed their gratitude on obtaining the valuable cooperation and approval of Liquefied Petroleum Gas Association.

—G. R. King, Philadelphia Electric Co., chairman.

Corrosion mitigation

A LONG-RANGE PROGRAM has been developed by the A. G. A. Subcommittee on Above-Ground Corrosion Mitigation Practices. Purpose of this group is to "consider and determine the occurrence of corrosion in all above-ground structures, equipment, and plant of the gas industry; to investigate, study and report means for the prevention and mitigation of such above-ground corrosion."

The group's program includes presentation of several papers at the two 1951 spring conferences of the A. G. A. Operating Section. The committee's long-range study plan has been increased to read as follows:

- (1.) Boiler corrosion and feed water treatment.
- (2.) Corrosion of condensers, purifying equipment, and precipitators.
- (3.) Survey of chemical resistant materials as applied to gas industry requirements.
- (4.) Mitigation of boiler feed water tank corrosion.
- (5.) Cathodic protection of above ground structures, including water tanks, sprinkler systems and tank bottoms.
- (6.) Experiences with paint test panels in gas works atmospheres.
- (7.) Painting experiences on piston type gas holders and steel tanks, particularly on the undersides of flanges.
- (8.) General properties of various classes of paints.
- (9.) Surface preparation for painting.
- (10.) A survey of various paint systems.
- (11.) Paints for structural steel and enclosed structural steel members.
- (12.) Painting, inspection, and maintenance.

nance of the interior of water storage tanks.
(13.) Comparison and interpretation of plant analyses made by research organizations.
(14.) A survey of holder painting methods for water seal holders, including the flotation method of painting; with an interpretation by the subcommittee.
(15.) Internal corrosion and cleaning of the

interior of steam, water, and gas lines.
(16.) Use of aluminum buildings, structures, and equipment.
(17.) Bacteriological corrosion of the tanks of water seal holders.
(18.) Establishment of annual survey methods for the determination of plant deterioration, with an estimate of maintenance expend-

itures in man days necessary to restore the plant to good condition.
(19.) The spraying of metal to protect iron and steel.
(20.) External and internal corrosion of gas meters.

—W. J. Schreiner, *The Cincinnati Gas & Electric Co., chairman.*

Merchandising analyzed by Mid-West gas men

D. A. HULCY, president of American Gas Association and president of Lone Star Gas Co., was the main speaker before the opening session of the forty-sixth annual convention of the Mid-West Gas Association in Omaha, March 12-14.

Officers elected at the convention were:

president—Larry Shomaker, vice-president in charge of sales, Northern Natural Gas Co., Omaha; first vice-president—Amos H. Abbott, gas engineer, Northern States Power Co., St. Paul; second vice-president—Everett E. Baxter, vice-president, Central Electric & Gas, Lincoln, Neb.; secretary-treasurer, Harold E.

Peckham, gas superintendent, Northern States Power Co., St. Paul.

Latest techniques of merchandising and promotion were presented and discussed at the convention sessions. A record number of members were present.



George E. McCaffrey

superintendent of gas for the Stamford Division, The Connecticut Power Co., died on March 24, 1951, following a nine weeks' illness. He was 52 years old.

Mr. McCaffrey graduated from Worcester Polytechnic Institute as a chemical engineer in 1919. He then was employed by Stone and Webster, Boston, Mass. as chemist with Haverhill Gas Light Company. In 1923 he was promoted to chief chemist of Fall River Gas Works by the Stone and Webster Company. Mr. McCaffrey joined The Connecticut Power Company as superintendent of gas on March 1, 1930, serving the company in that capacity for 21 years.

Surviving are his wife, Mrs. Ruth C. Holden McCaffrey; a brother, Joseph F. McCaffrey; and three sisters, Miss Mary G. McCaffrey, Mrs. Harry Ludwig, and Mrs. Mabel Richmond.

Charles E. Gallagher

former president and chairman of the board, The East Ohio Gas Co., Cleveland, Ohio, died on March 8, 1951. His career included not only the entire life-span of The East Ohio Gas Co., but also five years prior.

Mr. Gallagher began as a clerk with Mountain State Gas Co., Parkersburg, West Virginia. Before joining East Ohio in 1899, he served with United Natural Gas Co., Bradford, Pa., and Ohio City Fuel Supply Co., Knox, Pennsylvania.

From the rank of clerk at East Ohio, Mr. Gallagher advanced steadily, becoming general manager, vice-president, and finally president in 1933. In May 1941, he retired after 48 years of service in the utility field. He was a member of American Gas Association.

Charles E. Gallagher was a brother of Ralph W. Gallagher, first chairman of the Laboratories Managing Committee, American Gas Association.

Edward L. Davies

retired vice-president and operating manager, Long Island Lighting Co., Mineola, N. Y., died in Garden City, L. I., on April 16. He was 66 years old.

Mr. Davies graduated from Cornell University in mechanical engineering. He began his career with The United Gas Improvement Co., Philadelphia, in 1907 as an operating constructive engineer.

In 1912, Mr. Davies moved to New York as gas engineer for Queens Borough Gas and Electric Co., Far Rockaway, N. Y. Later he became operating manager of Nassau and Suffolk Lighting Company and Long Beach Gas Company. He retired in 1945 due to ill health.

Mr. Davies was a member of American Gas Association and Society of Gas Lighting. He is survived by his wife, Mrs. Margaret Taylor Davies, and a son, Richard Livingston Davies.

Franklin F. Schauer

a former president of Equitable Gas and Pittsburgh and West Virginia Gas Companies, died April 11, in St. Petersburg, Florida. He had been residing in that city since retirement in June 1945.

Widely known in the gas industry, Mr. Schauer was only 19 when he first entered the gas field in 1899 as a clerk with The United Gas Improvement Co., Philadelphia. A broadening experience as distribution superintendent and later as assistant engineer, Kansas City Gas Co., and as distribution engineer for Syracuse Lighting Co., gave him a thorough knowledge of the gas industry and its basic importance in the national economy.

In July 1920, Mr. Schauer joined Equitable Gas Company as assistant to the general manager. In 1924 he was made general service manager, Philadelphia Co., and in 1928 became general manager, Equitable Gas Company. The following year he became vice-president and general manager of Equitable and Pittsburgh and West Virginia Gas Companies. He held that position until January 20, 1942, when he was made president of the two companies, serving until his retirement

three years later because of ill health.

Mr. Schauer was active in American Gas Association, Pennsylvania Natural Gas Men's Association (past-president), and Engineers Society of Western Pennsylvania (past-president).

He is survived by his wife, Achsah Hawwer Schauer, and by one son, Charles H. Schauer.

Charles D. Meginnis

assistant treasurer, The Philadelphia Gas Works Co., died suddenly on Friday morning, March 16, 1951, at his home in Ocean City, New Jersey.

Mr. Meginnis graduated from the Wharton School of University of Pennsylvania and joined The Philadelphia Gas Works Company in June 1930. He was made assistant treasurer of the company in January 1948. He was a member of American Gas Association, Pennsylvania Gas Association, and National Association of Cost Accountants.

He is survived by his wife, Betty Lee Meginnis; his mother, Jennie Estelle Meginnis, and his sister, Dorothy E. Meginnis.

L. E. Brown

vice-president and general manager, Central Illinois Light Co., Peoria, died Saturday, March 31, in Peoria, after a brief illness. He was 58 years old.

Mr. Brown had been with the Illinois company since 1933. Prior to that time, he was associated with The Commonwealth & Southern Corporation in an executive engineering capacity in Jackson, Michigan.

After graduation from Kansas University in 1914, he spent two years with the Westinghouse organization. He then left to take up engineering work with Eastern Michigan Power Co., the construction organization for Consumers Power Company at that time. Later he served as general superintendent of Springfield (Ohio) Light, Heat and Power Company and its successor, Ohio Edison Company.

Mr. Brown was a member of American Gas Association and Edison Electric Institute.

Radiant heat

(Continued from page 10)

intensity. As temperature drops, these changes are reversed. This is significant in heating glass, in which reception of radiant heat changes with the wave lengths.

It often has been implied that heat from radiant burners has mysterious penetrating quality in the heating of metals and other opaque materials. So far as we know, however, heat which reaches the interior of a piece of gas-heated metal arrives there by conduction from the surface. In the heating of glass, however, a different situation exists.

Properties of glasses vary widely, for there are hundreds of formulas in commercial use today. Some, for example, have high dielectric strength while others readily conduct electricity. Likewise, the reception of radiant heat by glasses varies widely also. Radiant energy may be reflected, transmitted or absorbed. In the radiant heating of most glass, all three occur together.

Figure 4 shows transmission by three different types of glasses of comparable thicknesses but with different analyses, using wavelengths from zero to three microns. Obviously, where transmission is low, absorption is high. Curve A is for a high clarity glass which passes at least 90 percent of light rays and most of the infrared up to about 2.6 microns. Curve B is another glass which transmits many of the light rays but absorbs and converts most of the infrared rays into heat. Curve C, on the other hand, transmits no visible light but passes most infrared rays up to 2.6 microns.

Figure 5 shows these same glass transmission curves plotted with that segment of the radiant burner emission curve which lies in the same range—from zero to three microns. By comparison it can be seen that most radiant heat absorption by glasses A and C take place beyond 2.6 microns where radiant burner output is not so great. Glass B, however, readily absorbs those heat rays which the burners deliver in greatest quantity. The conclusion reached, of course, is that in the radiant heating of glass, the matter of wave lengths deserves careful consideration.

It has already been pointed out that infrared energy comprises only a portion of the output of a radiant gas burner. On-the-job performance, however, has shown that the importance of this radiant energy portion is much greater than is indicated

by quantity alone.

It is well known that radiant energy travels in straight lines at a speed of 186,000 miles per second. Speed is not the only consideration, however. Operating temperatures, thermal differentials and other factors play important roles in determining rates of heat transfer. To provide graphic comparison of transfer rates developed through radiation, forced convection and natural convection methods, Figure 6 has been taken from data compiled at the University of Leeds in England. Curves A and B encompass all of the radiant heat transfer rates from sources with ordinary emissivities. Emissivity is radiating efficiency as compared to that of a "black body" or perfect radiator under the same conditions. Curves C and D indicate convection transfer rates with velocities of 50 and 30 feet per second respectively. Curve E gives comparable data for natural convection.

Directional control

As has already been shown in figure 4, radiant energy is both transmitted and absorbed by glass, in proportions which depend upon wave lengths, glass composition and glass thickness. Because most glasses are poor heat conductors, any heat released within glass materially reduces the time which would be required for it to creep inward by conduction. Simultaneous external and internal heating also reduces temperature differentials which are usually a major cause of glass "shrinkage."

Directional control over radiant energy makes it possible to transfer heat in patterns that are matched to work requirements. With radiant gas burners, these patterns are both versatile and adjustable. Except where direct and sharp flame contact with the ware may be tolerated, this is not readily accomplished with other burner types.

To meet exacting production requirements, specific radiant heat applications have been worked out by glass producers. Calling upon knowledge gained in glass and other industries, numerous radiant heat processes have also been developed by the equipment manufacturer. Further contributions have been made by the industrial gas engineer. Some of these applications have resulted from what might be called thorough analytical studies of basic heating requirements, while others were worked out in sheer desperation after all other methods had failed.

New radiant gas heat applications continue to appear. Some of these are so far afield from long accepted conventional practice as to arouse some quite understandable skepticism. Although customer reticence prevents discussion of some of the more interesting uses, enough significant applications may be mentioned at this time to indicate the further possibilities of radiant heat in the glass industry.

Fluorescent lamp tubes are made in a number of lengths and diameters, but all of them must be heated for baking the interior coating, for straightening and for annealing. Much of this production is carried out in remarkably short, high speed lehrs. At rates approximating one tube per second, these three operations all take place beneath radiant roofs in "heating machines" like those shown in the large illustration on page 8. Similar lehrs, which permit easy arrangement of radiant roof patterns from operating floor levels, are in use today from Manila to Madrid. In this application, some radiant energy passes through the glass to bake fluorescent coatings from within. Simultaneous external and internal heating shortens cycles, reduces both equipment size and fuel requirements.

On the top of each incandescent lamp is a small monogram which gives the maker's name and lamp rating. That monogram is fired in what amounts to a local or "spot" heating job. A small round radiant burner permits fast heating at close range, and yet without flame impingement. The reduced transparency of the imprint permits it to absorb radiant heat faster than the glass around it. This method has increased both speed and quality of production. As a result, a leading lamp producer has recently instructed all plants to convert to it.

Where preformed glass picture tube faces are fused to metal tube side walls, it is necessary to temper these faces and redistribute strain patterns within the glass in such a manner as to reduce the likelihood of subsequent breakage. This was formerly done by sweeping the face with bushy gas flames while oxy-gas torches fused the glass-to-metal seal at the edges. It has been found recently, however, that radiant burners placed above and directed down toward the faces succeed in producing much improved strain distribution.

Probably the earliest application of radiant gas heat in picture tube manufacture was where so-called electron "guns" are sealed into the narrow tube necks.

The electronic mechanism is previously mounted on a glass stem assembly, with a flange slightly smaller in diameter than the glass tube neck. Although the actual seal and cut-off is usually performed by oxy-hydrogen flames, both preheating and annealing is accomplished with air-gas burners. Originally bushy flames were employed here, but small non-impinging radiant burners were found to be so satisfactory that they are now almost universally used for the purpose.

Figure 7 shows the cross-section of a large all-glass picture tube. A phosphor coating is applied on the inside of the face B and a conductive "Aquadag" coating on the tapered inside walls A and C. These are baked at various temperatures, but usually at about 400°C.

Because glass thickness (and therefore heat capacity) is much less in the neck at A than in the face B, uniform heat application brings thin sections to temperature sooner than heavier sections. This results in uneven expansion, with frequent breakage at the seal line C. The effort to minimize this expensive "shrinkage" had resulted in long and costly ovens.

When men from the lamp industry were brought into television work, they reasoned that radiant burner patterns could here also equalize differential heating rates. After rather extensive investigations, production installations were made. Now a number of radiant gas processing units are used in this field, nearly all of which have supplanted larger electric ovens. For the same rate of production, these radiant gas units require less floor space, less energy and much less time. Most important, "shrinkage" has been reduced substantially.

Many convex glass objects are formed by heating flat glass plates or discs to the softening point and permitting them to drop by gravity or by forcing them into molds with shaped plungers.

Traveling horizontally through the heating chamber in molds or mold rings, the glass is rapidly and uniformly heated as it passes under flat arch radiant roofs. For a particularly difficult operation involving large and sometimes irregular shapes, one manufacturer has just installed his third radiant-roof lehr. These three lehrs have replaced less efficient muffle type units which had required appreciably longer time cycles.

If metal molds with high heat storage capacity must be heated, some bottom heating may also be required. In various patterns, one midwestern plant has

added hundreds of radiant burners which improve temperature in its "dropping" lehrs.

A plate glass manufacturer was faced with the problems of maintaining uniform temperatures throughout a particularly long glass feeder trough. This had to be done without agitation, because disturbance to the molten glass surface resulted in bubbles or "seeds" in the plate. Initial efforts to solve his problem involved the controlling and relocating of blast type burners. He finally succeeded, however, by mounting twelve large radiant burners above and facing down upon the flowing glass. Turbulence is now so low that the glass stream itself has the appearance of a mirrored surface, and product quality is much improved.

Securing temperature uniformity across a moving strip of slowly cooling plate glass, long has been a problem. As in other glass annealing processes, the customary solution has been to use longer time cycles than otherwise necessary, allowing the material to "soak" until temperatures become uniform. In the case of plate glass cooling, this resulted in annealing lehrs hundreds of feet long.

In a successful effort to increase satisfactory production without a corresponding increase in lehr and building length, one producer recently placed inverted radiant burners over the cooling glass within his existing lehrs—in patterns which offset non-uniform heat losses. He solved the immediate problem. From these results, a radiant designed lehr is indicated as a better permanent installation.

A radiant lehr has been in operation for several years dropping lenses for sun glasses. Figure 8 shows an end-to-end section of this 35-foot lehr and the corresponding time-temperature curve which indicates the separate phases of the operation. Time in the annealing section is 7½ minutes, only three times the theoretical minimum. This is unusually brief.

The lehr utilizes radiant roof sections with different patterns for preheating, dropping and annealing. Until they leave the dropping section, molds are heated also by tunnel burners beneath, and zones are separated by refractory walls suspended from above. Water coils are used in two cooling sections, while slow cooling through the critical annealing zone is controlled by radiant burner patterns of low intensity.

In the production of watch crystals, a highly mechanized process employs a dial with open inverted radiant burners

for preheating the blanks and for controlled cooling after forming. They are then transferred to a lehr heated by radiant burners from overhead. The displacement there of nozzle mixing torch flames by the radiant burner roof reduced heavy "shrinkage" to a negligible quantity.

The forming of eye-glass grinding blanks requires a comparable heating operation. Because higher heats are necessary, a rotary hearth furnace replaces the open heating dial.

Tableware is decorated by fusing on colors of powdered low temperature glass. These are applied in a moist vehicle by the silk screen process and dried between the applications of separate colors before firing. Water tumblers being decorated are heated for predrying in less than one minute by passing them between facing rows of radiant burners, and cooled again in about two minutes by controlled air blast. This seems to be an ideal application because of the fact that radiant heat is selectively absorbed by the opaque colors in preference to the clear glass bodies.

Conclusions

The glass industry continues to introduce new products and to invade new markets. It is certain that development and use of better heat processes have made possible at least one new glass product for which demand still far exceeds supply. Increasing use of radiant gas heating is responsible for more and better ware—at lower cost. Acceptance of these improved heat processes is increasing the glass industry's demands for constant supply of uniform, quality fuel.

To what extent will these demands be satisfied by the gas industry?

Accounting for pipes

(Continued from page 18)

A sample inventory sheet is shown in Figure 6 with tabulating machine printed entries in the first two columns of material description and symbol numbers, which are printed from the master price cards. The figures on "count per inventory" are entered by the inventory clerks and the remaining figures are entered by the reconciliation clerks.

When the amount "per books" is entered on the inventory sheet from a ledger card, an indication that the item has been inventoried is stamped on the ledger card in the "Min-Max" space as follows: (See page 46)

Accounting for pipes

(Continued from page 45)

Inventoried in 1950 •
 " " 1951 •
 " " 1952 ○
 " " 1953 ⊕
 " " 1954 X (then repeat)

Posting for necessary adjustments are made to the individual ledger cards from the inventory sheets, and then the inventory sheets are used for the preparation of, and in support of, the adjustment journal entry.

When the unit price is punched into the issue and return tabulating cards from the master price cards, an alphabetical description of the item is also punched in the card. After the detail cards have served their purposes for stores accounting and for material and stores distribution, the detail cards for construction orders are sorted out of the pack and filed in construction order number. When a construction order is closed the cards for that construction order are listed by a tabulating machine on a "Detail of Material Used for Construction" form showing alphabetic description, etc. This completed form is forwarded to the property records department where it is retained as a record of the material used on construction project.

All purchase requisitions for stores items are checked against the stores ledgers to see if the quantity ordered appears reasonable. Then the quantity used in the last six months is entered on the purchase requisition for later reference in support of the buyer's decision.

Quantities of the same item in other storerooms are then reviewed (adjacent cards) to see if a transfer can be made rather than a purchase. For example, suppose the requisition calls for 100 of a particular item and the buyer finds that there are 475 of that item in storeroom #401 and 468 of the same item in storeroom #416. Reference to the card for storeroom #401 shows that from 200 to 250 of such items are being used each month, so there is no opportunity for transfer there. Reference to the other card, however, shows that only 25 to 30 are being used each month with an apparent surplus on hand. The buyer immediately telephones the storekeeper at storeroom #416 and inquires as to whether or not the surplus is being held for some particular job. If the answer is in the negative, the storekeeper is requested to transfer 100 pieces of the item

to the requisitioning storeroom and the requisition is noted accordingly.

Once a year all cards are reviewed to determine which are the slow moving items. A quick glance at the panel tells whether there are any "stickers" or not. Any card with as many as four inventory marks on it is definitely a slow moving item. A list is made of these and other slow moving items, if they are not being held as repairs or replacement for equipment or machinery. These lists are checked with the storekeepers and superintendents to see which items should be retained, transferred, sold, or disposed of in some other manner.

After the basic tabulating machine work has been completed (which, with slight expansion, could provide price and inventory control) the posting machine work remains yet to be done. Such work for a division with from 30,000 to 40,000 material issue entries per month and with some 12,000 different stores items requires the time of one bookkeeping machine operator for about two to two and one-half weeks per month. This is the additional time required to provide the visible ledger with chronological entries, which gives purchase control, material transfer possibilities, and materials control, in addition to required price and inventory control.

Employee accidents

(Continued from page 7)

tured and mixed gas branch of the industry is equivalent to a decline of approximately 24 percent from 22.72 in 1949.

Natural gas utilities and pipelines had

an accident severity rate of 0.78 in 1950, a decline of 10.3 percent from the 0.87 days lost per 1,000 hours worked in 1949. Severity rate for the manufactured and mixed gas utilities showed a marked decline of about 32 percent from 1.19 in 1949 to 0.81 in 1950.

Last year, the A. G. A. Bureau of Statistics began reporting indexes of the frequency and severity rates for natural gas, manufactured and mixed gas, and for the total industry. The years 1935-39 were employed as the base period, on the presumption that these years most nearly represent normal prewar industrial and economic activity.

On the basis of the 1935-39 average, frequency rates of both branches of the total industry and the severity rate for the manufactured and mixed gas branch all were higher in 1950. On the other hand, severity rates for the natural gas branch and the total industry declined. Current indexes of frequency and severity rates for the natural gas branch of the industry are 103.5 and 60.0 percent of the base period averages (1935-39 = 100). In the manufactured and mixed gas branch of the industry, the 1950 indexes of frequency and severity rates are 139.6 and 101.3, when compared with the 1935-1939 averages. Frequency rate index for the total industry is 118.5 while the severity rate index is 77.5.

After all the statistics have been accounted for, one fact stands out. The gas utility industry can point with pride to its 1950 safety record.

How does your company stand on accidents? Check your record with that of the gas utility industry.

ACCIDENT EXPERIENCE OF THE GAS INDUSTRY IN 1950

	Total Gas Industry	Manufactured & Mixed Gas	Natural Gas
Number of reporting companies	423	143	280
Hours of exposure	335,508,965	102,057,860	233,451,105
Number of employees	161,411	49,709	111,702
Number of injuries			
Fatality	20	5	15
Permanent total disability	1	0	1
Permanent partial disability	179	89	90
Temporary total disability	5,177	1,674	3,503
Total	5,377	1,768	3,609
Time charges			
Fatality	120,000	30,000	90,000
Permanent total disability	6,000	0	6,000
Permanent partial disability	65,900	29,388	36,512
Temporary total disability	72,875	23,331	49,544
Total	264,775	82,719	182,056
Frequency rate	16.03	17.32	15.46
Severity rate	0.79	0.81	0.78
1949			
Frequency rate	17.92	22.72	15.22
Severity rate	0.99	1.19	0.87

Aggressive Approach

(Continued from page 28)

the past few years. More than 69 percent of the electric ranges in use today were sold in the five postwar years, he declared.

E. S. Pettyjohn, director, Institute of Gas Technology, Chicago, told the delegates that one big job of the Institute is to sell gas industry as a future for young men. The speaker reviewed some of the methods being followed under the gas industry's research programs to insure continuity of energy supply on a year around basis. Storage, liquefaction, interchangeability of substitute gases with natural or mixed gases, and studies on combustion are some of the projects carried on to improve gas and gas services.

Raymond J. Vandagriff, Laclede Gas Co., St. Louis, presided at the final session on Wednesday. J. G. Dierkes, incineration division, Bowser, Inc., demonstrated the advantages of gas incineration over all other methods of waste disposal. He pointed out that by comparison, the number of appliances in the gas industry is limited, but that what we do have are needed and important.

Home service activities do much in the way of selling the Blue Flame. A panel of home service experts with Elizabeth Lynahan, The Peoples Gas Light & Coke Co., Chicago, as moderator, gave an effective presentation of the aid the home service representatives give the sales organizations of gas utilities. Mrs. Mary L. Bohn, Laclede Gas Co., St. Louis, described courses given by her company to housewives who are cardiac patients and have been ordered to limit their activities in their homes. Lessons conducted in the "Heart Kitchen" by the company, demonstrated work and step savers for women suffering from heart ailments. This work was an adjunct of the campaign initiated by A. G. A. in cooperation with National Heart Association.

Mary Elizabeth Huck, The Ohio Fuel Gas Co., Columbus, reviewed benefits that could be gained by gas utilities through the use of televised home service shows. This medium offers an excellent opportunity to display the advantages of gas appliances at close range and to demonstrate their superiority in actual performance.

School children are potential future gas customers. Mrs. Helen Mandigo, The Gas Service Co., discussed the contact work being done by her company in all local fields of education. Through use

of new equipment installed in primary, high schools and colleges, an excellent promotion job for gas appliances has been effected. Through skits and demonstrations, more than 5000 students have been contacted under this school program. Eleanor Morrison, Michigan Consolidated Gas Co., Grand Rapids, outlined several colorful and interesting promotions carried out by her department as tie-ins with the industry campaigns initiated by A. G. A. Gas refrigerators and CP ranges lend themselves particularly well to such demonstrations, Miss Morrison remarked.

The conference closed on a serious note with an inspirational address by Paul S. Weaver, Stephens College, Columbia, Missouri.

A gas versus electric demonstration designed by Equitable Gas Co., Pittsburgh, Pa., showed the superiority of the modern gas range over its electric competition. The demonstration was a feature attraction at the Eastern Natural Gas Regional Sales Conference.

Step by step, Flora Dowler, Ruth Severson and Kathryn Barnes, home service directors for The Manufacturers Light and Heat Co., The Peoples Natural Gas Co., and Equitable Gas Co., respectively, demonstrated that the electric range is not as fast, clean, cool, economical and efficient as the modern automatic gas range. Thus they disproved the major claims of many electric companies and electric range manufacturers.

The skit was carried out on a modern gas range and a modern electric range of similar appearance and made by the same manufacturer. As each demonstration was performed, large clocks and meters registered the cost and the length of time for preparation on each range.

Following the manufacturer's instructions, four cups of coffee were made in three minutes 58 seconds on the gas range. But it took 12 minutes on the electric range. Water in both coffee makers was of the same temperature at the start, having been taken at the same time from the same container.

Next, using identical tea kettles, containing two cups of water of identical temperatures, it was shown that the tea kettle on the top burners of the gas range began to steam after three minutes 20 seconds. It took five minutes 45 seconds on the electric range.

Electric companies have claimed that operation of the electric range is easier

to control. This, too, was disproved. When the gas was turned off under the kettle on the gas range, it stopped steaming. But when the energy was turned off under the kettle on the electric range, it continued to steam because of the stored heat built up in the heating element under the kettle. It was pointed out that the only way to avoid this would be to lift the vessel off the element.

Clean cooking has been claimed as one of the features of the electric range. Yet when spill-overs are burned off the electric element, as recommended by the manufacturer, considerable smoke and unpleasant odors arise from the element. The demonstration showed that on the gas range, the flame consumes the smoke. The same was shown to be true of oven broiling—smoke from the electric range but none from the gas range.

There is no condensation from oven roasting in a gas range. But the electric range is even built to permit the condensation to escape down through the range on to the floor, in the case of the electric range demonstrated.

When broiling in most electric ranges, it is recommended that the door of the broiler be left open about two inches at the top. In fact, there is a stop built on the door for this purpose. But what about "cool cooking?" Can you have cool cooking with the heat from the broiler escaping into your kitchen?

In addition to the meters and clocks mounted above each of the ranges to show cost and time of operation, there was a large panel of 100-watt electric lamps. Miss Dowler switched these on in varying numbers to indicate the wattage used for the various operations on the electric range.

Early in the demonstration, it was pointed out—using figures applicable in the Pittsburgh district—that the modern gas range costs \$30 to \$100 less to buy and approximately \$22 less to install. As for cost of operation, gas is cheaper than electricity, 4-to-1 for oven roasting, 4½-to-1 for broiling, and 6-to-1 for top burner cooking.

Design of the demonstration setting and preparation of the accompanying talk were based on recent cooking comparison studies completed jointly by home service and utilization engineering personnel of Equitable Gas Company. Effective ideas and demonstration material originated by other utilities were also used. The setting was built in Equitable's display shop.

Dollar sales

(Continued from page 11)

standing to sales remained fairly constant with the first six months for the country as a whole. In the Mid-Atlantic, West North Central, East South Central and Mountain States, however, the rate of increase in the percentage of outstanding to sales was considerably above the average. Also, the increase in net charge off was much greater in these areas. In the West North Central region, however, a single bankruptcy in one company was responsible for an exceptionally large loss. Omitting this case, the uncollectible bills increase for the area would be approximately 28 percent, instead of 78.9 percent.

Consider now the percentage of increase in outstanding to sales and net charge off for the Mid-Atlantic States. It might be suspected that the reduced number of discontinuance notices, customers turned off for non-payment, and amount of deposit outstanding, are responsible for such increases. This is dispelled, however, when you notice that the number of discontinuance notices, customers turned off for non-payment, and amount of deposit outstanding in the East South Central areas, increased 19.3 percent, 23.4 percent and 10.3 percent respectively. At the same time the percent of outstanding to sales rose 18 percent, and the net charge off increased 39.2 percent. Both increases in percent of outstanding to sales and net charge off are greater than the rise in the Mid-Atlantic region.

Attention is also directed to the ap-

parent increase in collection activity in the Mountain States area, which also shows a considerable rise in uncollectible bills. Note, too, that although the amount of sales and outstanding increased in New England, the number of discontinuance notices, customers turned off for non-payment, and deposit outstanding, all dropped. The net charge off, instead of increasing, was reduced at a slightly greater pace than were credit and collection activities.

In the West South Central area, the net charge off was 2.2 percent less than the 1949 period, while the number of discontinuance notices increased 29.3 percent and the number of customers turned off for non-payment increased by 50.5 percent. In the West South Central area, some companies that increased their notices, accounts turned off for non-payment and deposit outstanding, indicated reduced losses, while other companies indicating increased credit and collection activities showed greater losses. For example, one company increased its notices from approximately 30,000 to 45,000, increased accounts turned off for non-payment from 1,300 to 2,400 and increased deposit outstanding from \$423,000 to \$460,000. However, the amount charged off was increased from \$2,700 to \$4,500. Another company in reducing its losses from \$54,000 to \$50,000, increased its discontinuance notices from 13,000 to 21,000, accounts turned off for non-payment from 450 to 600 and deposit outstanding from \$355,000 to \$361,000.

In the Mid-Atlantic States, figures for the region indicate relaxed credit and

collection activity and increased losses. One company, which showed an increase of 13 percent in the number of discontinuance notices, and eight percent in the customers turned off for non-payment, had an increase in net charge off of 61 percent. Another company in the same area reported a reduction of 18 percent in the number of discontinuance notices, 15 percent in the number of customers turned off for non-payment, and an increase in net charge off of 46 percent.

It cannot be concluded, as we see it, that the continued increase in losses is due to a relaxation of credit and collection activities. Rather, the picture indicates a healthy increase in the amount of sales; but apparently economic conditions in certain areas are such that money is tighter and customers are not as able to pay as they were in 1949. Conditions still look very good in New England. Some sections of the country apparently are hit more unfavorably than others.

The picture indicates that the individual companies, particularly in certain areas, should look to their collections. They should not use a slam-bang approach of more turn-off notices, non-payment discontinuances and increased deposits. Rather, they should employ a thorough and complete scientific analysis of the losses, so that the tightening of the strings can be made where it will mean reduced losses but continued good customer relations. In this connection, we suggest that you read the paper presented at the A. G. A. Convention in Chicago in October 1949, entitled "Let's Look at Mr. B. D." by O. B. Cook of the Customer Collections Committee.

New house heating load

(Continued from page 6)

and facilities can be geared up to successfully continue a program of this kind when a large number of heating installations are made in a short period of time. Since it has proved highly satisfactory to the present time, the company intends to continue it until such time as future conditions not now foreseeable indicate need for modification or revision. It may appear to be expensive, but the old adage of "an ounce of prevention" certainly holds good here. Failure to exercise reasonable protective measures on new installations would certainly result in high service costs, dissatisfied customers, and above all, in the loss of prestige for the company and for gas as a fuel for all other purposes.

The second part of the policy deals with the type of service the company will render to maintain the equipment in safe operating condition. It is quoted as follows:

"At the request of the customer, the company will pro-

vide, without charge, an inspection and adjustment service on any space heating appliance. Such service will include lighting, shutting down, making gas and air adjustments to burners, cleaning and adjusting pilots, and adjusting thermostats, limit and other related controls."

"On and after December 1, 1950, there will be a charge for each of the following services when performed by The Peoples Gas Light and Coke Company:

Lighting Gas Heating Plant	\$2.00
Turning Off Gas Heating Plant	2.00
Inspection of Gas Heating Plant	8.00."

In an expanding house heating field, we are faced with the problem of developing new personnel and facilities for handling the additional service calls, as well as the selection and training of additional manpower required to perform the service work. One of the characteristics peculiar to house heating service is its load. In attempting to build up manpower and facilities to meet the peaks, we could very

well find ourselves with a surplus of both during a good part of the year.

It might be mentioned that house heating equipment is not only increasing in volume but in variety and complexity, and it takes a long time to train an employee to be an all around heating service man. The service work load is heavy during about five months of the year. It also follows a pattern of a peak load during the light up season and several peaks during the winter when the temperatures fall far below the average. Therefore, the balancing of the work load is an important factor to be considered when faced by a large increase in the number of house heating customers.

I now refer to an amendment of December 1, 1950, when our company reluctantly departed from its traditional free service policy for light ups and the so-called "periodic" inspection. A copy of a letter sent to all heating customers announcing the change in policy appears on page 6.

Light up requests continue

Despite all efforts made by the company to encourage customers to light their own equipment or to give the company advance notice, the light up requests ranged between 16 per cent and 20 per cent of installations. If spread over an extended period it could be handled without too much difficulty. But it has the habit of coming all at once and, being superimposed on the normal service work load, places a strain on the manpower and facilities of the company. The \$2.00 charge, while only nominal, is expected to cause many customers who have depended on the company for the light up, to leave the pilot lit all year around or cause others to become better acquainted with their equipment and take care of the light up themselves.

With regard to the inspection service, our company found from experience that this was not necessary every year and so scheduled this type of work as fill in on a two or three year voluntary basis. The company, however, has continued to make such inspections at any time the customer requests it and many such requests were received every year during the heating season. The charge of \$8.00 for such service is also nominal and its purpose is to regulate and control the work load rather than to deny the service if the customer wishes it.

The third part of the policy deals with the replacement of parts and certain types of work which the company does not perform. It is quoted as follows:

"When inspection discloses that a part requires replacement, the company will, where possible, provide a temporary means to keep the appliance in safe operation until the necessary replacement is made. The company will make replacements on the basis of prices established for such service, provided the necessary parts are in stock. If the replacement involves the running of electric wiring or steamfitting work, the customer will be referred to an electrical or steamfitting contractor or manufacturer's agent. Where repairs to the chimney or the installation or replacement of a chimney liner is indicated, the customer will be referred to contractors engaged in that type of work."

The company feels no obligation to provide part replacements for equipment it does not sell. Therefore, where these are found necessary the customer is referred to the manufacturer's agent. The company continues to maintain a

stock of parts on equipment it sold originally in the event such parts are not readily available through the manufacturer's agent. The company will also assist the customer in the event he has any difficulty in securing the proper replacements from that source.

One of the dangers of sub-standard equipment getting on the lines is the procurement of replacement parts after the equipment promoter has gone out of business. This must be kept uppermost in mind at all times on new installations. This part of the policy also points out that the company will not perform work which is normally performed by outside trade organizations and by adhering strictly to this it helps to cement good relations with dealers and installing contractors.

This concludes the brief review of our company's operations, its policies and practices. They are not presented as a model for all to follow, but only as an expression of the views of one company in its house heating program.

In the final analysis each company will work out its own program depending upon conditions prevailing in its own territory. However, there are certain practices common to all companies which must be considered in the planning and execution of its house heating program. These are summarized as follows:

- (1) A clear cut and consistently administrated allocation system designed to insure fair treatment to all customers.

- (2) The securing and maintaining of complete cooperation of the manufacturers, dealers, and installers in their territory to the end that they will recognize the soundness of the company's equipment and installation requirements and will conform themselves accordingly.

- (3) Well defined and coordinated procedures in the customer's department, sales department, laboratory, and distribution department since the employees of these departments are closely associated with the administration of the company's policies.

- (4) Well organized training procedures for house heating service men; development and maintenance of adequate service dispatching and control facilities to insure the performance of customers service at a reasonable cost to the company.

- (5) The development of procedure designed to balance the work load as evenly as possible between the heating and non-heating seasons of the year.

We have been asking for this house heating load for a long time. Now we suddenly find it at our doorstep at a time when we are unable to supply the demand and must resort to limitation orders until such time as a greater supply of gas may be made available. This is not a problem singular to our company, but one that prevails throughout most of the country. Our company, like many others, is striving to increase its gas supply so that gas limitation orders may be lifted at the earliest possible date. Our aim is to fulfill our purpose as a utility again—to supply service to all who desire it at the most reasonable rates which the company can afford.

The effect of the new house heating load on customers service will depend to a large degree on how well a company lays the ground work for it. It is hoped that some companies will find ideas presented in this brief article that will prove of assistance to them.

New A.G.A. members

Gas companies

Dyersburg Gas Department, City of—Dyersburg, Tenn.
(I. C. McLester, superintendent)
MidSouth Gas Co., Little Rock, Ark.
(W. A. Green, vice-president)

Associate companies

Ford, Bacon & Davis, Inc., New York 6, N. Y.

Manufacturer companies

W. H. Boyes & Co., Santa Clara, Calif.
(W. H. Boyes, partner)
Denholme Incorporated, New York, N. Y.
(James Horsfall, president)
H-P Products Inc., Louisville, Ohio
(Harold P. Bishop, president)
Pioneer Furnace Co., Los Angeles, Calif.
(Robert V. Giertz, plant engineer)
Sieglar Enamel Range Co., Centralia, Ill.
(Walter G. Ullman)
Viking Superort Corp., Brooklyn, N. Y.
(Oscar D. Nelson)

Individual members

Maurice Allen, Norwalk Valve Co., South Norwalk, Conn.
William H. Allen, Michigan Consolidated Gas Co., Detroit, Mich.
Carl O. Anderson, Southern Counties Gas Co., Ventura, Calif.
Charles A. Anderson, The Peoples Natural Gas Co., Pittsburgh, Pa.
Earle N. Armstrong, Transcontinental Gas Pipe Line Corp., Houston, Texas
George M. Arnold, Michigan Consolidated Gas Co., Detroit, Mich.
Thomas N. Banks, Southern Counties Gas Co., Pomona, Calif.
J. W. Barnes, Michigan-Wisconsin Pipe Line Co., Detroit, Mich.
Richard F. Barry, Arthur Young & Co., New York, N. Y.
John R. Bartlett, Peat, Marwick, Mitchell & Co., Shreveport, La.
E. Beatie, Southern California Gas Co., Los Angeles, Calif.
Stephen Bennis, Gross Distributors Inc., Riverside, Conn.
Stanford Berry, Northwest Cities Gas Co., Seattle, Wash.
E. G. Black, Milwaukee Gas Light Co., Milwaukee, Wis.
George R. Boddeker, Chicago, Ill.
A. M. Boehm, Worthington Pump & Machinery Corp., New York, N. Y.
John A. Brady, Northern States Power Co., Eau Claire, Wis.
Van E. Britton, Southern California Gas Co., North Hollywood, Calif.
Glenn F. Brown, Conversions & Surveys, Inc., New York, N. Y.
Donald E. Buckley, The East Ohio Gas Co., Cleveland, Ohio
Grace Burtis, Houston Natural Gas Corp., Houston, Texas

R. F. Carney, Industrial Gas Supply Corp., Houston, Texas
A. L. Christensen, Northern States Power Co., La Crosse, Wis.
Arthur D. Christopher, Michigan Consolidated Gas Co., Detroit, Mich.
John P. Clennon, The Peoples Gas Light & Coke Co., Chicago, Ill.
R. L. Cooper, Jr., Southern Union Gas Co., Albuquerque, N. M.
Harold E. Crane, Koppers Co., Inc., Pittsburgh, Pa.
James Crane, Jr., Chicago, Ill.
Leo L. Creighton, Pacific Gas & Electric Co., San Francisco, Calif.
Walter H. Davidson, Transcontinental Gas Pipe Line Corp., Houston, Texas
Jack R. Davis, Southern California Gas Co., Los Angeles, Calif.
Dorothy A. Dean, The East Ohio Gas Co., Cleveland, Ohio
Jerome J. De Brue, Northern States Power Co., Eau Claire, Wis.
J. P. DeHette, The Youngstown Sheet & Tube Co., Youngstown, Ohio
R. T. Denton, Southern Counties Gas Co., Santa Ana, Calif.
O. P. Dice, Iowa-Illinois Gas and Electric Co., Rock Island, Ill.
Latham L. Dodge, James Graham Manufacturing Co., Portland, Ore.
Charles S. Earnshaw, Pacific Gas & Electric Co., Oakland, Calif.
Henry A. Eddins, Laclede Gas Co., St. Louis.
J. J. Edwards, American Stove Co., Los Angeles, Calif.
Marshall Egan, Southern Counties Gas Co., Pomona, Calif.
Arthur T. Everham, Midwestern Contractors, Inc., Wheaton, Ill.
P. H. Fahrer, A. O. Smith Corp.—Prod. Serv. Div., Los Angeles, Calif.
D. F. Findlay, Iowa-Illinois Gas & Electric Co., Fort Dodge, Iowa
Kehl P. Fisher, Porto Rico Gas & Coke Co., San Juan, Puerto Rico
T. A. Flynn, Southern California Gas Co., Los Angeles, Calif.
Sergeant M. Foeller, Michigan Consolidated Gas Co., Detroit, Mich.
Harold L. Fogler, Laclede Gas Co., St. Louis.
Vincent D. Fortunato, The Peoples Gas Light & Coke Co., Chicago, Ill.
Harold F. Frahm, Michigan Consolidated Gas Co., Detroit, Mich.
John F. Fugazzi, Gas Engineering Department Public Service Co., Denver, Colo.
Ionel I. Gardescu, Transcontinental Gas Pipe Line Corp., Houston, Texas
John Gibson, Michigan Consolidated Gas Co., Detroit, Mich.
Thomas L. Goodwin, Jr., Consolidated Edison Co. of New York, Inc., New York, N. Y.
K. E. Graff, Commonwealth Natural Gas Corp., Richmond, Va.
William Green, Michigan Consolidated Gas Co., Detroit, Mich.
D. E. Harper, Equitable Gas Co., Pittsburgh, Pa.
J. Leslie Hart, United States Pipe & Foundry Co., Chicago, Ill.
Thomas K. Harton, Michigan Consolidated Gas Co., Mt. Pleasant, Mich.

R. Leonard Hasche, Tennessee Eastman Corp., Kingsport, Tenn.
John D. Haverkamp, New Orleans Public Service Inc., New Orleans, La.
William J. Hawkins, Stewart-Warner Corp., Indianapolis, Ind.
George E. Heller, Elizabethtown Consolidated Gas Co., Elizabeth, N. J.
James B. Henderson, Transcontinental Gas Pipe Line Corp., Houston, Texas
Warner A. Higgins, Canadian Gas Association, Toronto, Ontario, Canada
Arthur L. Hill, El Paso Natural Gas Co., Houston, Texas
Eleanor M. Hill, Arizona Wholesale Supply Co. Inc., Phoenix, Ariz.
R. F. Hinchey, West Texas Gas Co., Lubbock, Texas
Henry M. Hobson, Public Service Electric & Gas Co., Newark, N. J.
Richard B. Hogge, Pacific Lighting Gas Supply Co., Los Angeles, Calif.
Richard E. Houser, El Paso Natural Gas Co., Houston, Texas
Walter F. S. Howell, Manchester Gas Development Centre, Town Hall, Manchester, England
John J. Hull, The Bridgeport Gas Light Co., Bridgeport, Conn.
Marjorie Hume, San Diego Gas and Electric Co., San Diego, Calif.
C. A. Isbell, Southern Counties Gas Co., Los Angeles, Calif.
Walter W. Ivings, A. O. Smith Corp., New York, N. Y.
William M. Jackson, Levittown, L. I., N. Y.
Frank Jerigan, Southern Union Gas Co., Dallas, Texas
Dale B. Jobson, Milwaukee Gas Light Co., Milwaukee, Wis.
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1951

MAY

- 2 •New Jersey Gas Association, home service conference, Military Park Hotel, Newark, N. J.
- 7-8 •A. G. A. Natural Gas Department, spring meeting, Baker Hotel, Dallas.
- 7-11 •National Restaurant Exposition, Navy Pier, Chicago, Ill. (A. G. A. will exhibit)
- 14-16 •A. G. A. Production and Chemical Conference, Hotel New Yorker, New York, N. Y.
- 17 •Joint Economic Conference of A. G. A. Committee on Economics and New England Gas Association, Hotel Statler, Boston, Mass.
- 14-18 •A. G. A. Industrial & Commercial Gas Section, Industrial Gas School, William Penn Hotel, Pittsburgh, Pa.
- 15-17 •Pennsylvania Association, Wernersville, Pa.
- 17-19 •Public Utilities Advertising Association, annual meeting, Hotel New Yorker, N. Y.
- 21-23 •Missouri Association of Public Utilities, Jefferson Hotel, St. Louis, Mo.
- 24-25 •A. G. A. Domestic Gas Research & Utilization Conference, Hotel Statler, Cleveland, Ohio
- 24-25 •Midwest Industrial Gas Council, Sheraton Hotel, Detroit, Mich.
- 29-June 1 •Institution of Gas Engineers, London, England.
- 31-June 1 •Natural Gas and Petroleum Association of Canada, annual convention, Royal Connaught Hotel, Hamilton, Ontario

JUNE

- 1-2 •A. G. A. Executive Conference, Edgewater Beach Hotel, Chicago.
- 8 •A. G. A. Great Lakes Personnel Conference; A. G. A. Midwest Personnel Conference, President Hotel, Kansas City, Mo.
- 18-19 •A. G. A. New York-New Jersey Regional Gas Sales Conference, Berkeley-Carteret, Asbury Park, N. J.
- 18-21 •Canadian Gas Association, annual convention, Bigwin Inn, Lake of Bays, Ontario
- 18-23 •Association Technique de L'Industrie du Gaz en France, Nantes, France
- 25-26 •Michigan Gas Association, Grand Hotel, Mackinac Island, Mich.
- 26-29 •American Home Economics Association Annual Convention, Cleveland, Ohio. (A. G. A. will exhibit.)

September

- 4-6 •Pacific Coast Gas Association Convention, Fairmont Hotel, San Francisco, Calif.

OCTOBER

- 15-17 •A. G. A. annual convention, St. Louis, Mo.

Personnel service

SERVICES OFFERED

Twenty years' sales background. Thorough knowledge of residential, commercial, and industrial markets. Sales promotion, trade and dealer relations. Interested in utility converting to natural gas service or progressive LP utility. (45). 1669.

Manager or Operational Engineer—22 years' experience in plant operation with working knowledge of most phases of gas industry, particularly training and personnel relations. M. E. Degree. Married. Will locate anywhere. (45). 1670.

Accountant—Natural Gas Pipe Line. Fourteen years' oil pipe line accounting. Clerk to Assistant Treasurer and Director. Knowledge of office systems, procedures and operating expense in particular. 1672.

Sales—Technical or Administrative Assistant—Seven years' engineering experience with gaseous fuels, appliances, distribution, gas manufacturing equipment and process development, also some sales. Desire position related to the above in the gas field. 1673.

Sales and Engineering Management—Twenty years of engineering and administrative experience with well-known firms; demonstrated ability to organize and manage. Practical knowledge of all phases of industrial and commercial gas usage. Present position sales manager. Married. (46). 1674.

POSITIONS OPEN

Personnel Director for newly developed Eastern natural gas transmission company. Must have several years experience in oil or gas industry and be willing to travel. In reply, state in detail past experience, education, age, references, salary requirements. Replies held confidential. 0603.

Wanted Immediately Engineer experienced in natural gas utility field by one of fastest growing natural gas companies in Southwest. Must have following qualifications. More than 30

years of age. Prefer person with college degree in engineering; petroleum, civil or mechanical. At least three years of college and five years of experience with natural gas or natural gasoline company, including the following phases—drafting, compressor station design and operation, hydrogen sulphide removal plants, gas well testing, gas measurement, drilling operations. Salary commensurate with experience. Pleasant working conditions, numerous attractive employee benefits after period of regular employment. Location in Dallas, Texas. Submit abstract of experience, qualifications, employment history. 0605.

Gas Engineer—Technical graduate with supervisory experience for large West Virginia blue gas plant making process gas for chemical synthesis. Must have thorough basic knowledge of all gas making processes and ability to translate this into efficient operation. Experience with automatic grates and by-product ovens desirable. Salary commensurate with experience. 0606.

Staff Engineer for design and development of gas heating equipment by established midwest corporation located in city of 50,000. Must be college graduate with experience. Excellent salary to right man. Good opportunity to advance. Top employee benefits. All inquiries confidential. 0607.

Engineer—Age 22 to 35—Preferably mechanical or electrical. Should have degree or the equivalent. Experienced with recording and controlling instruments or gas measurement. \$4000 per year to start with opportunities for advancement. This position is with a large organization located in the Washington, D. C. area. A permanent position with excellent working conditions. Reply stating age, education, work history. 0609.

Assistant Sales Manager—Large eastern gas company requires services of conscientious, ambitious man experienced in the sale of gas and gas appliances as they pertain to the industrial and technical branches of a large gas utility. Acceptable candidates must be capable of directing the aforementioned sections of the Sales Department. Engineering background

necessary. Salary commensurate with ability. Reply giving complete resume of educational training and work experience. 0610.

Superintendent to head Production, Distribution, and Service Departments for small utility on eastern seaboard. Five years' broad experience desirable. Send full information in first reply, including education, experience, salary requirements, availability, and references. Strictest confidence. 0611.

General Operating Superintendent to supervise all operation, maintenance and service work of 8500 meter middle western natural gas utility. Should have had at least 10 years' experience in customer service work. Prefer engineering background, but not essential. Excellent working conditions. Please furnish complete details past experience, educational background, salary expected, references. 0612.

Large natural gas transmission company requires services of man experienced in Rate and Cost analysis in its Rate Department. Salary commensurate with ability. Reply in detail, stating age, education, past experience, references, salary requirements. Replies held confidential. 0613.

Mechanical Designer—A large Midwestern utility has available a permanent position offering excellent opportunity for development. Many employee benefits, including liberal pension, sickness benefit, and annual vacation plans; excellent personnel policies. Prefer man thirty to forty years old with experience in utility, steel mill, or other large scale operations on plant layout, equipment installation, and reinforced concrete and steel structures. Your reply in full detail will be treated confidentially. 0614.

Assistant General Manager for middle west gas utility serving city over 250,000. Age 40 to 45, with 10 years' or more utility experience, preferably in gas operations. Technical degree preferred but not essential. Must be able to assume top management duties, including administration, public relations, and supervision of all phases of gas operations. Attractive salary commensurate with abilities and responsibilities. 0615.

Industrial & Commercial

(Continued from page 20)

gave pertinent facts and figures on competitive commercial cooking. He suggested a renewal of offensive spirit to combat the claims of other fuels.

Certificates of life membership in the A. G. A. Industrial and Commercial Hall of Flame were presented to candidates who had qualified during the past year. Newly elected to the Hall of Flame were: Paul W. Craig, Equitable Gas Co.,

Pittsburgh; L. J. Fretwell, Oklahoma Natural Gas Co., Tulsa; A. D. Fryden-dall, The Peoples Gas Light & Coke Co., Chicago; F. A. Kaiser, Detroit-Michigan Stove Co., Detroit; Fred M. Reiter, The Dayton Power and Light Co., Dayton, and Harry B. Wilson, The Brooklyn Union Gas Company.

The final day's sessions were devoted entirely to industrial subjects. Oscar Byron, J. O. Ross Engineering Corp., described the latest developments in gas-fired air heaters. A series of slides illustrated his points.

A newer application of gas heating was described by Robert C. LeMay, Selas Corp., on specialized burner equipment for specific heating of television tubes during the many phases of their production. Dr. Horace Grover, Battelle Memorial Institute, Columbus, gave a preliminary report on an A.G.A. research project on gas vs induction in the heat treating of steel.

The talk by Stewart Parker, The Peoples Gas Light & Coke Co., Chicago, covered the subject of gas for melting

metal for die casting. Mr. Parker's paper has been selected for use as an Information Letter sponsored by the A.G.A. Metals Committee. Richard W. Thorne, president, Bennett Steel Treating Co., Newark, N. J., made an impressive case for gas in his talk on why a commercial heat treating plant should use gas.

In keeping with the times and as a companion address to other talks, J. P. Leinroth, Public Service Electric and Gas Co., Newark, N. J., described the "Responsibility of Industrial Gas Men in the National Emergency."

"We can be of most service to our customers," he declared, "if we have a personal knowledge and understanding of their plant operations and a broad knowledge of factory economics. Too much stress cannot be laid on taking a broad economic view of your customer's problem before getting down to details of applying gas to his particular process."

Mr. Leinroth concluded that by assuming responsibility, gas men can make a real and important contribution in the national emergency.

Volunteers wanted

AMERICAN GAS ASSOCIATION has received word that its membership is invited to present three individual papers on prominent topics at the next meeting of the International Gas Union. Presentations will be made at the fifth International Gas Conference in Brussels, Belgium, June 16-22, 1952.

Members of A. G. A. who would like to attend the 1952 conference in Brussels and present a paper are requested to contact immediately H. Carl Wolf, managing director, American Gas Association, 420 Lexington Ave., New York 17, N. Y.

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